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## BRITISH AND FOREIGN.

Edited by

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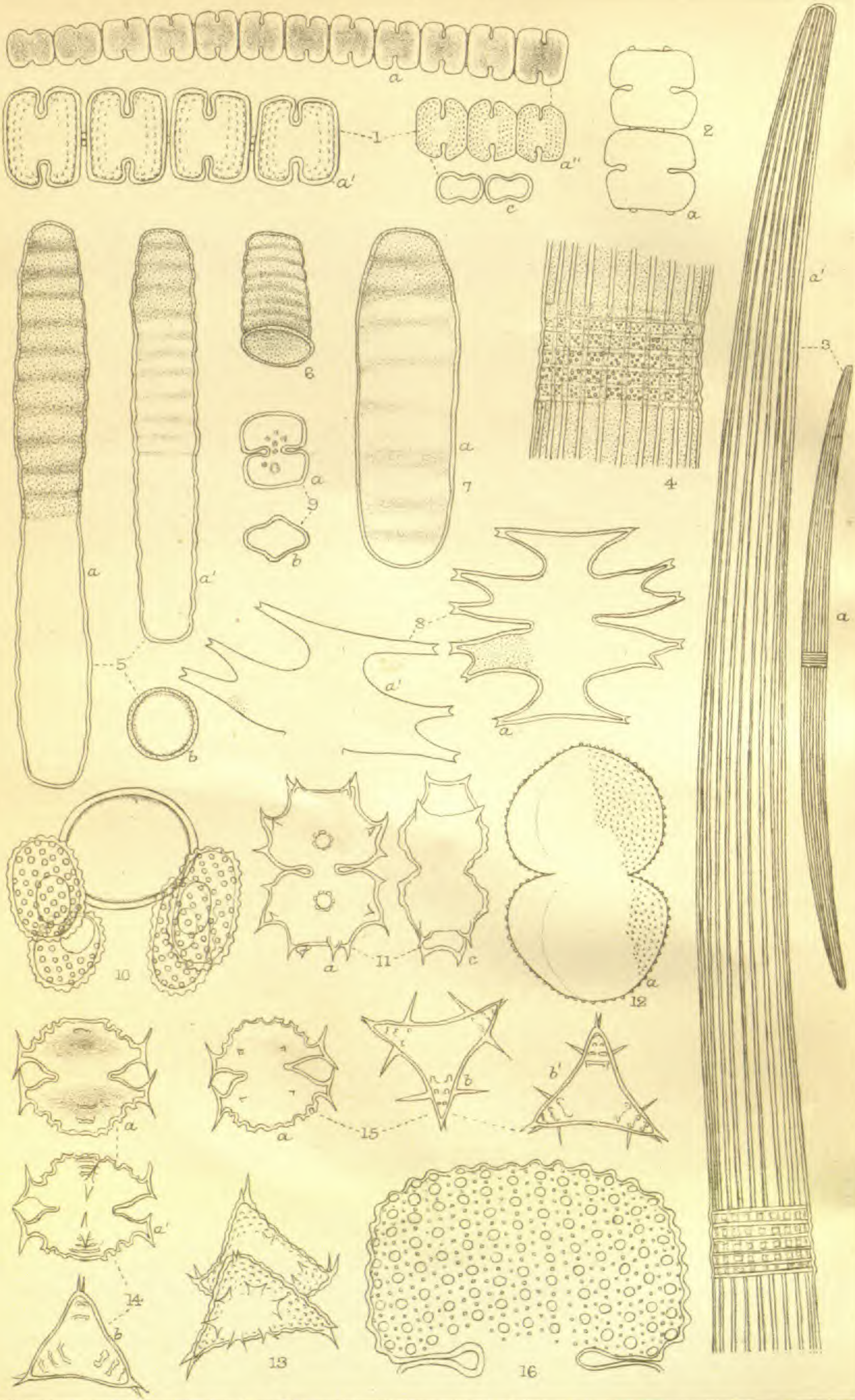


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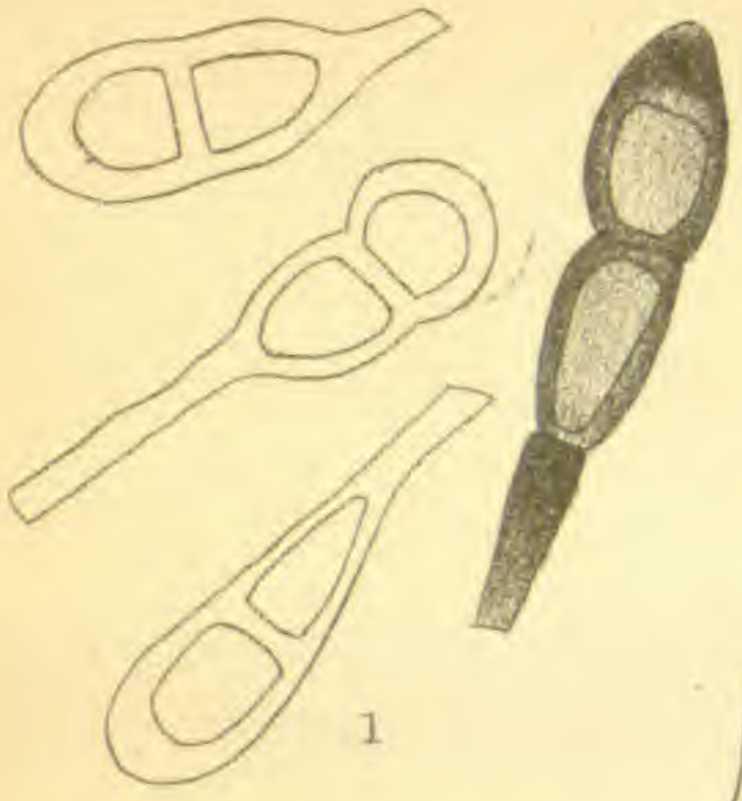

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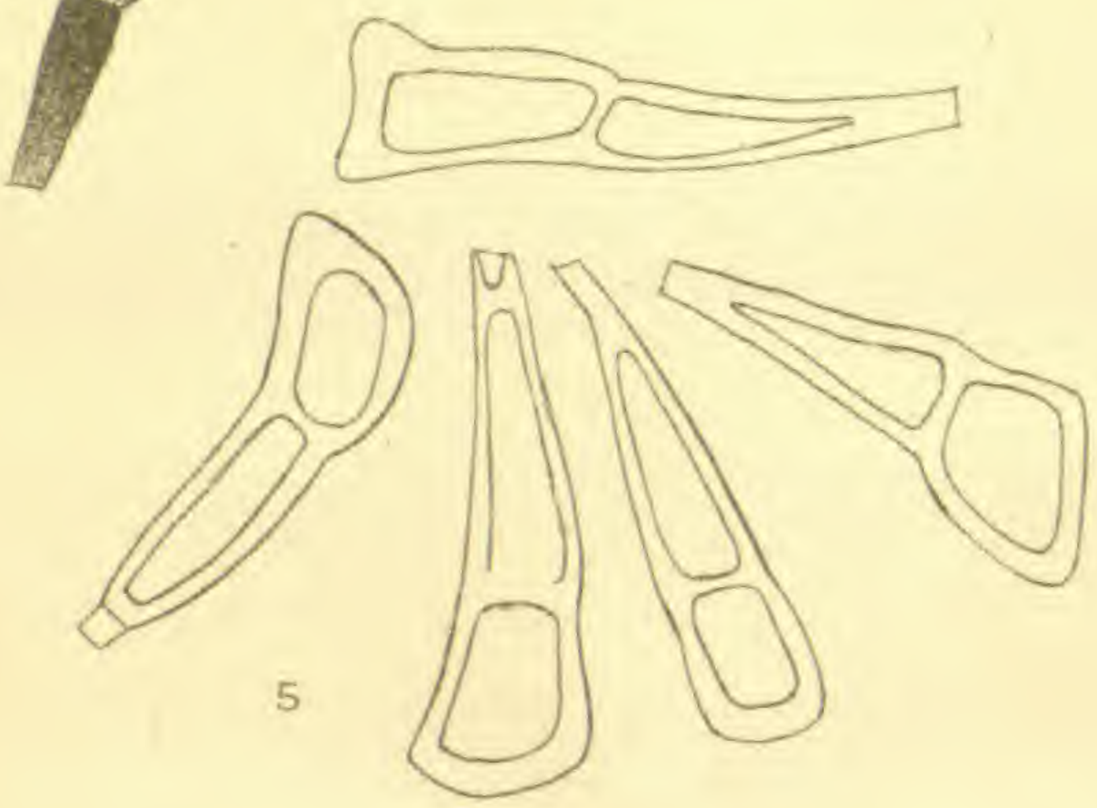

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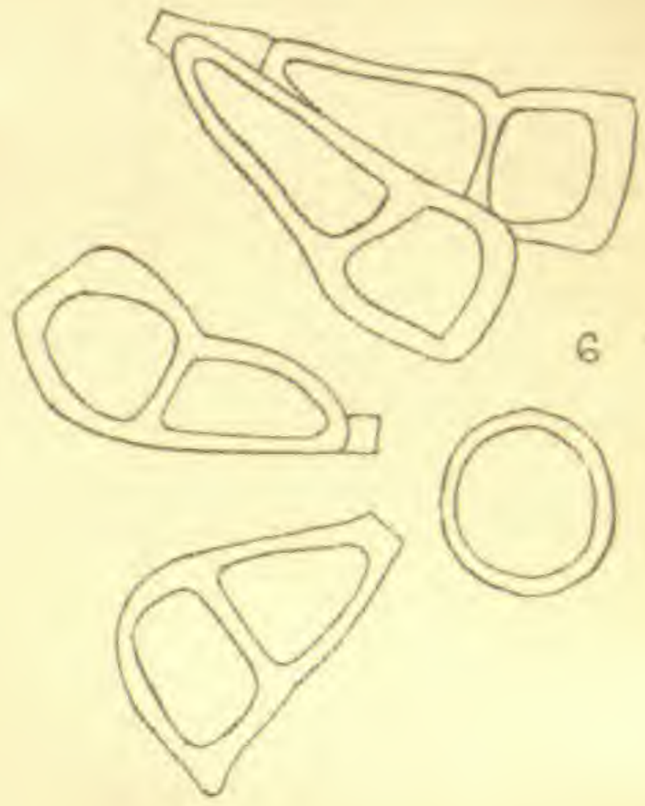

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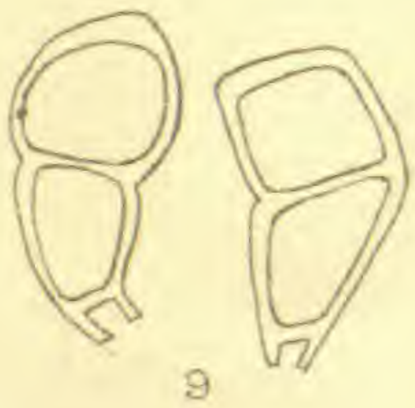

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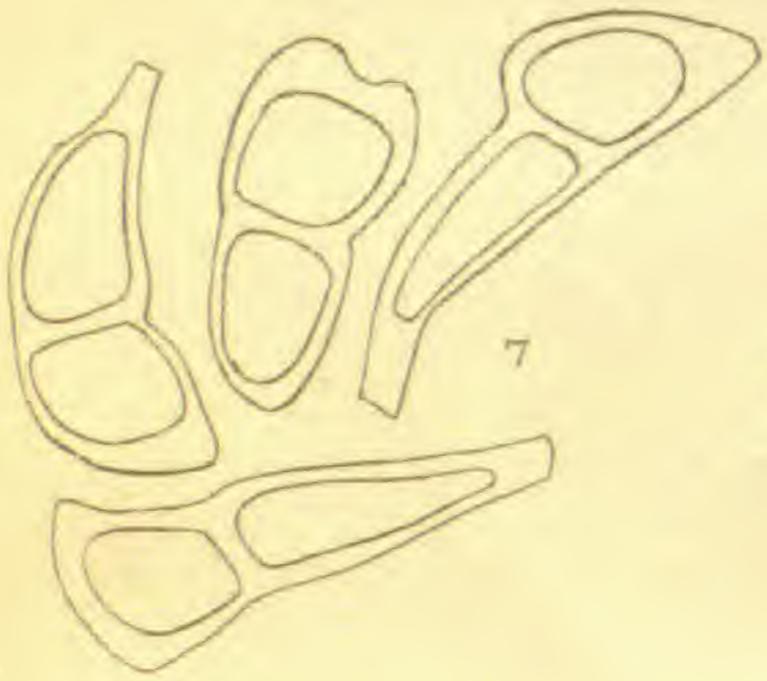

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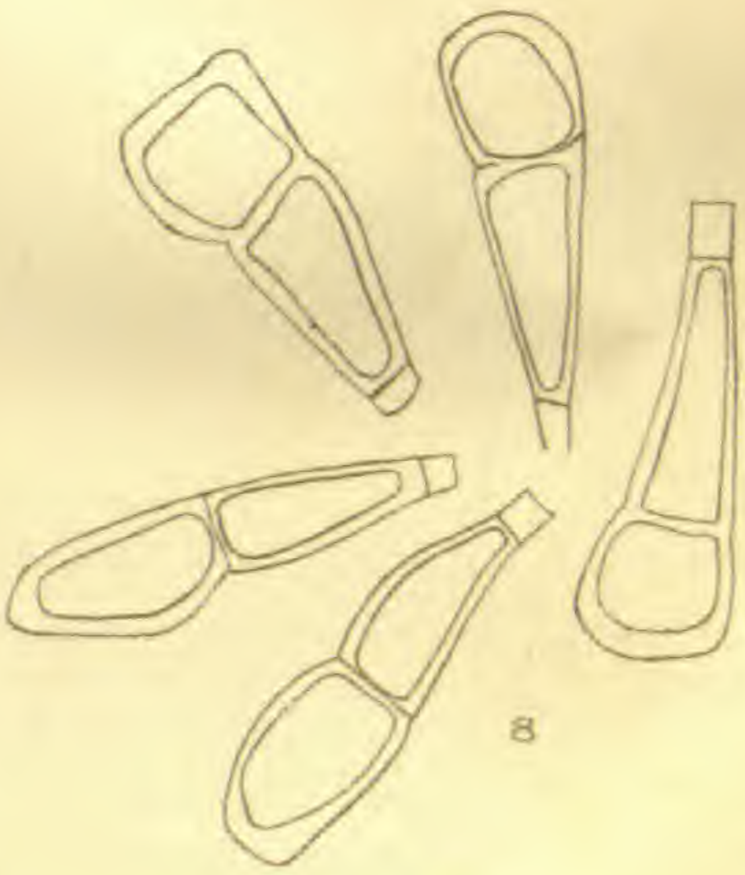

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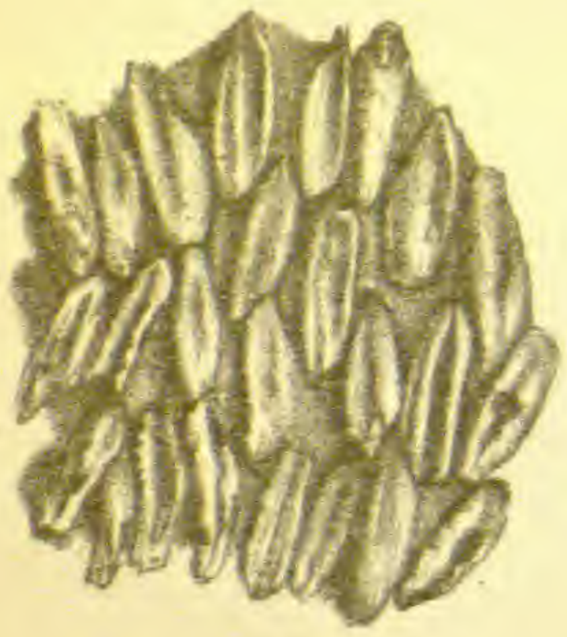

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Rust and Mildew in India.

THE

# JOURNAL OF BOTANY

BRITISH AND FOREIGN.

## RUST AND MILDEW IN INDIA.

By the late A. Barclay, M.B., F.L.S.

(Plate 316.)

In the course of my studies, now extending over several years, on the group of parasitic fungi known to botanists as the Uredineæ, my attention has naturally been directed frequently to those species which attack cereal crops, and are so destructive of them. Indeed, as Mr. H. L. Bolley writes in a recently published bulletin,* "There is, perhaps, among the numerous diseases of our cereal crops, not one that is, or can be, of more disastrous consequences to the farmer than the various species of rust which attack his field crops." Yet it is astonishing how little attention has been paid in India to this source, sometimes of enormous loss, and always, as appears probable, of considerable loss. Other fungi have been the cause of immense and sometimes total destruction to other crops, *e.g.*, the vine, potato, coffee, &c.; but although these have justly attracted much attention, I do not think any one of them can compare in importance with the rust and mildew of cereal crops, both because a failure of the former crops (with the exception perhaps of the potato crop of Assam) withdraws only a direct supply of luxuries, which are not usually enjoyed by the actual producers, and because rust and mildew are a source of *constant* loss, and directly affect the staple article of food of the labourers in wheat-producing areas. We have, however, so far as I am aware, and I have looked carefully for information in every direction, not even the crudest approximate estimate of the geographical distribution of the pest in our wheat-producing areas. Still less have we any knowledge of the actual amount of loss sustained in the out-turn of grain, either from attacked fields or from individual plants.

With regard to the geographical distribution of the disease, there can, I think, be no doubt that it exists wherever wheat is grown. This statement is not a mere haphazard conjecture, but is based on the known distribution of the parasite in other parts of

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* *Bulletin of the Agricultural Experiment Station of Indiana*: H. L. Bolley, July, 1889.

the world, and upon certain direct personal observations. These latter are, of course, few, as I have had neither the time nor the opportunity for extending them. Such as they are, however, they will be set forth as soon as I have given reasons for believing that the fungus is prevalent in India wherever wheat is grown, from its known distribution elsewhere. Thus we know it to be extensively prevalent throughout Europe and the United States. It is also known to occur over large areas in Australia, so much so that Prof. F. M. Webster, the American representative at the Australian Exposition, "informs us that in some of the colonies the raising of wheat, oats, and similar cereals has to be almost abandoned because of the prevalence of rust, where otherwise crops above the average could be produced."* The Director of the Agricultural Experiment Station of Indiana (Dr. H. E. Stockbridge), who was lately in the service of the Government of Japan, states, "that in the northern part of that country, where the government has made costly and strenuous exertions to supplant rice culture by the growing of wheat, the latter crop is frequently utterly ruined, and on the average damaged to the extent of 20 per cent. by the very general prevalence of rust."† Dr. Frank‡ says it is known in the Cape of Good Hope, and, indeed, that the fungus appears to accompany crops all over the world.

From this alone we might safely assume that it is also extensively prevalent over India. But there is some direct evidence pointing to this conclusion. In the *Transactions of the Agricultural and Horticultural Society of India*, vol. vi., 1839, Capt. Sleeman reports the immense destruction of crops from it in the Narbadda Valley and through Malwa generally. The particular epidemic he describes was unusually severe, and this periodic recurrence of severe epidemics is characteristic of the disease. Thus particular years of frightful destruction are known to have occurred in England, Germany, and America. It might therefore be supposed that during the intervals of such epidemics the pest is absent. This, however, is not the case elsewhere in the world, and is not the case in India. In 1887 Col. Kenneth Mackenzie, Judicial Commissioner of Berar, informed me that he had *frequently* known rust to be so prevalent in that province, that in walking through fields his clothes were covered with red dust (the uredospores). Again, early in 1889, a year not known to be one of rust prevalence, I obtained specimens of well rusted wheat from such remote localities as Dumraon, Jeypore, and Gujrat, and later from Gilghit; while my personal observation of the fields about Simla for some years showed me that the wheat crops are annually enormously rusted and mildewed. There can therefore be no doubt in my mind that the parasite is widely prevalent, and that it *annually* gives rise to enormous loss.

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*H. L. Bolley, *loc. cit.* See also *Gardeners' Chronicle*, June 7th, 1890, p. 714, where it is noted, "It is estimated that a million of money has been lost this season in South Australia, from the ravages of red rust."

† H. L. Bolley, *loc. cit.*

‡ *Die Krankheiten der Pflanzen:* Breslau, 1880.

We may next proceed to attempt to guess the magnitude of the loss sustained in India in wheat alone, leaving out of consideration the loss from other crops known to be similarly affected. In an interesting article on this subject, by Mr. W. C. Little, in the *Journal of the Royal Agricultural Society of England*, he writes:—"Among the numerous diseases which affect the cultivated crops of this country, there is probably not one which is more disastrous to the farmer than wheat mildew is in those parts of the country where it is frequently prevalent." He then goes on to estimate the actual money loss sustained by the farmers of the counties around Cambridgeshire, of whom he was one, in 1881, a year of great rust prevalence, over a cultivated area of 15,000 acres, and writes:—"If we estimate that throughout the districts of which I have spoken, the wheat crop was damaged to the extent of £4 an acre, we have an aggregate loss to the farmers of that district amounting to £60,000 on the wheat alone, leaving out of sight the damage done to other crops." Mr. H. L. Bolley, of the Agricultural Experiment Station in Indiana, writes*:—"It is quite common for rust to be credited with damage equal to 50 per cent. of the normal crop. However, few farmers would consider that rust usually takes less than one-hundredth part of the wheat crop; and yet, doubtless, this is a very low estimate of the actual annual loss occasioned to the wheat fields of Indiana. The state being among the largest wheat producers of the country, it will be seen that our farmers, even at this low figure, must stand in the aggregate an annual loss of from 300,000 to 500,000 dollars. The average annual wheat yield of the United States is placed at 512,763,500 bushels. Considering the value of this crop at 80 cents per bushel, a loss of one-hundredth part by rust represents a total annual loss to the wheat producers of our country of 4,102,108 dollars, figures which in themselves are quite astonishing, yet must be low."

I have already stated that in Japan the crops on an average suffer a loss of 20 per cent. from this cause.

In Sleeman's article, already referred to, he writes:—"When a crop is attacked it is often not worth the reaping"; and again, "I have seen rich sheets of uninterrupted wheat cultivation for twenty miles by ten, in the valley of the Narbadda, so entirely destroyed by this disease, that the people would not go to the cost of gathering one field in four." "I believe the total amount of the wheat gathered in the harvest of 1827, in the district of Jubbulpore, was not equal to the total quantity of seed that had been sown." "The disease began first to manifest itself upon the leaves of the wheat about the 10th of March, .1829, and from that time I watched its progress till its work of destruction had been completed, about the end of the month." But I must again draw attention to the fact that this was a very unusually severe visitation.

So much then for the general loss sustained by attacked areas:

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* *Loc. cit.*

we see that it ranges from an annual minimum loss of one-hundredth part of the possible produce, through 20 per cent. (in Japan) and 50 per cent. (a general estimate in some regions), to complete loss in years of exceptional visitation. It will be interesting, with these data, to consider the possible and probable financial loss occasioned by the parasite in India. Basing our calculation on the very low estimate given by Bolley for Indiana, namely, one-hundredth part of the crop, we arrive at the following results :— The estimated outturn of wheat during the year 1888–89, for the whole of India, was 6,510,797 tons, raised from 26,508,000 acres, and the value of this crop, at the rates adopted in the Inland Trade Returns, is Rs. 410,191,677. If rust and mildew are prevalent throughout the wheat-producing areas of India, then the least loss occasioned by it may be set down with comparative certainty at Rs. 4,000,000 annually. But as I have no direct evidence that rust is universally present throughout India, I would prefer to estimate the loss which is probably sustained in those parts of India in which I know that the disease certainly exists, namely, in the Punjab, North-Western Provinces and Oudh, Central Provinces and Berar. In these parts, the average area under wheat cultivation during the four previous years was 16,734,000 acres, and the outturn of wheat in 1888–89 was 4,354,869 tons. This was valued at Rs. 296,152,594, and a loss of one-hundredth means a loss of nearly three millions of rupees annually to the wheat producers of the area. I think there is no doubt whatever that this loss is considerably under-estimated, and that it is much more likely to be five times as great. My reason for making this last statement is based upon certain direct observations made upon the pernicious effect of the parasite on individual plants. The contrast between grains of wheat taken from perfectly healthy plants and those taken from mildewed plants is very striking, and I have attempted to show this in figures 10–13, from a photograph; but as this does not convey any accurate idea of solidity, I have so arranged it that the groups of grains represented are of equal weight. The healthy grains, and those taken from plants that had been attacked by *Puccinia graminis* (Rolli), were received from Jeypore, already cleaned from the ear. I placed ten of the former into one pan of a pair of scales, and found that they required from 26 to 36 grains of the latter to balance them, or, on the average of several weighments, 30 grains. We have here then a loss of 200 per cent. in the case of individually attacked plants. The samples of *P. rubigo* I received from Jeypore had not their grains taken out. I did this myself, however, and from two ears (which to outward appearance were as full-looking as healthy ears) I obtained only thirty-seven miserably shrivelled-up grains, which were equal in weight to only four sound grains. Here then was an enormous loss of 825 per cent.* Lastly, I extracted the grains from the ears of mildewed specimens which I received from Dumraon (attacked with *P. rubigo*), and found that they were not

* I found later that 10 healthy grains weighed 60 of these, *i.e.*, 500 per cent.

nearly so reduced as the corresponding Jeypore grains, twenty of them equalling in weight the ten sound Jeypore grains. In this case, therefore, there was a loss of 100 per cent. These data are not, of course, absolute indications of the harm done by the parasite to each plant attacked; they are quoted only to show that the disease has most destructive results. The amount of loss occasioned in the ears of individual plants must depend upon the period of its life at which it was attacked, the extent to which it is attacked, &c., these again depending on weather, soil, and other conditions.

It has also occurred to me that some presumptive evidence might be obtained of the prevalence and influence of rust and mildew in India, by comparing the outturn of wheat for a series of years, in those provinces in which the fungus certainly exists, with the climatic conditions prevailing during the earliest months of the year, when the wheat plants are in the stage of existence most liable to attack. Dr. George Watt, C.I.E., has kindly given me a tabular statement showing the price of wheat (seers per rupee) for the 29 years, 1861–89, in the Central Provinces, Punjab, and North-West Provinces and Oudh; and as this appeared to me to be a good index of the outturn of grain for each year, I have thrown the results into a graphic form in Table I. Unfortunately, meteorological data are available to me only from 1875. From a summary of meteorological conditions, prepared annually for the Sanitary Commissioner with the Government of India, I have extracted the data necessary for my purpose, and have exhibited them in Table II. The weather during January, February and March is most important in this connection, not only because it has a maximum effect on the growth of the wheat plants themselves, independently of any fungal attack, but also because this is the season during which the parasite usually attacks these plants. The humidity of the air, the cloud proportion, and the rainfall, are the most important factors. A combination of all these in slight excess (except perhaps cloud) is, I presume, favourable to the growth of the host (wheat plants), and is certainly (especially including cloud) favourable to the growth of the fungus. Now, if in any year we find that these climatic conditions were favourable to the growth of the wheat plants, but that the outturn of wheat was, nevertheless, poor, we may with some plausibility attribute the deficiency of outturn to the repressive influence of the parasite; for otherwise I do not know how the deficient outturn could be accounted for. In order to render the meteorological data readily comprehensible, and comparable with the graphic representation of the outturn of wheat each year, I have arranged them in a compressed tabular form, indicating excess over the average by X, and deficiency by D; whilst a normal condition is represented by N. Wherever a very decided condition, either of excess or deficiency, was noted in the meteorological report, I have enclosed the letter X or D within a circle. In a few instances the condition was not clear, and in such cases I have inserted a mark of interrogation.

Before proceeding to a comparison of the outturn with these

TABLE I.

Central Provinces

Punjab

N.W.P. and Oudh

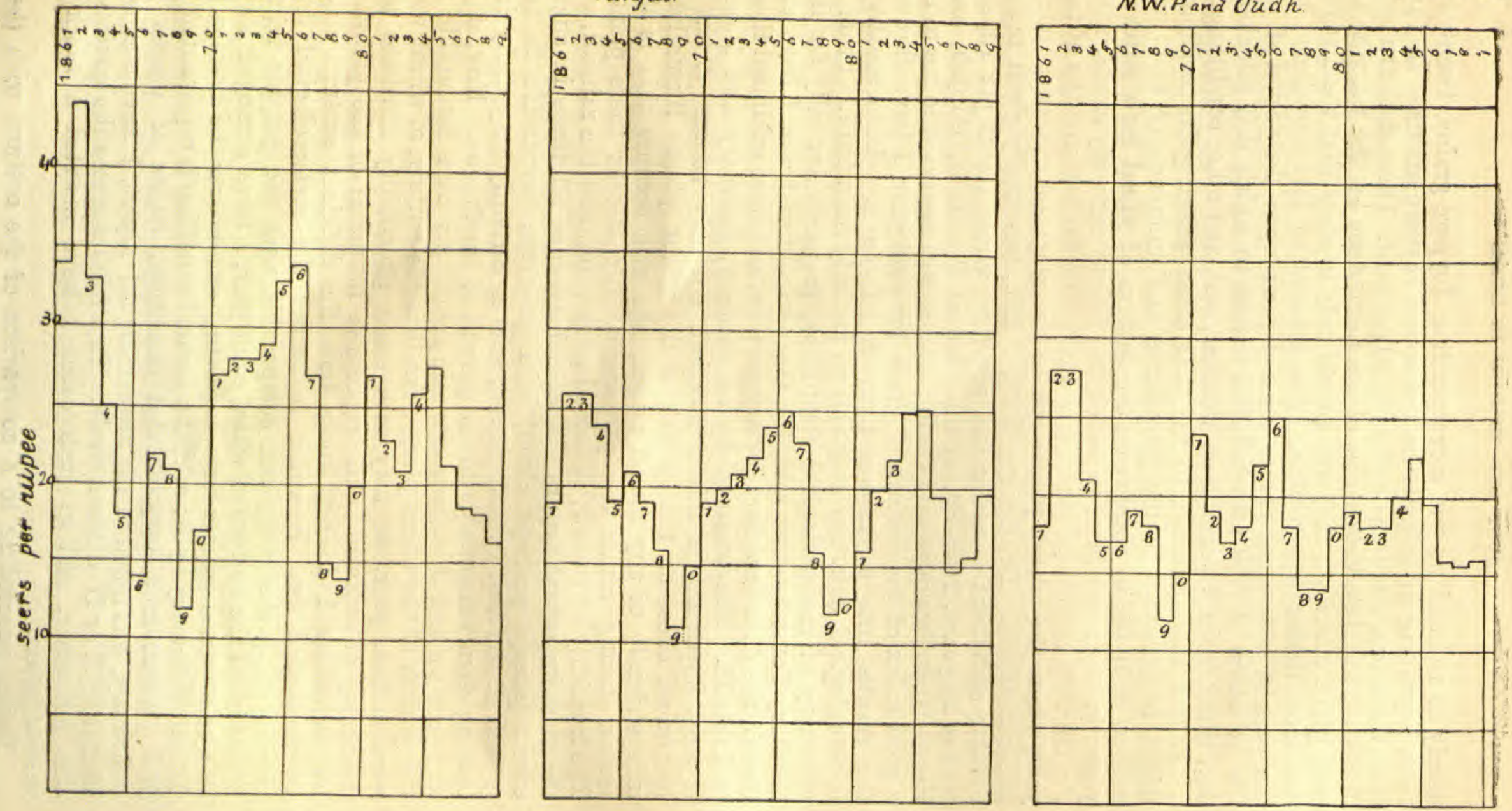

TABLE II.

| | CENTRAL PROVINCES | | | | | | | | | | | | | | | PUNJAB. | | | | | | | | | | | | | | | N.W.P. and OUDH. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HUMIDITY. | | | | | CLOUD | | | | | RAIN | | | | | HUMIDITY | | | | | CLOUD | | | | | RAIN | | | | | HUMIDITY | | | | | CLOUD | | | | | RAIN | | | | |
| | Jan | Feb | Mar | April | May | Jan | Feb | Mar | April | May | Jan | Feb | Mar | April | May | Jan | Feb | Mar | April | May | Jan | Feb | Mar | April | May | Jan | Feb | Mar | April | May | Jan | Feb | Mar | April | May | Jan | Feb | Mar | April | May | Jan | Feb | Mar | April | May |
| 1875 | D | X | D | D | D | | | | | | D | D | D | D | D | | | | | | | | | | | D | D | D | D | D | | X | D | D | X? | | | | | | N | X | D | D | X? |
| 1876 | D | D | N? | D | D | | | | | | D | D | D | D | N | D | D | X | D | D | | | | | | N? | D | N | X | | D | D | D | D | D | | | | | | D? | D | X | D | D |
| 1877 | (X) | X | X | X | X | (X) | X | X | (X) | (X) | X | X | X | (X) | X | X | X | X | X | X | (X) | X | X | (X) | X | X | (X) | D | X | X | X | X | X | X | X | (X) | X | (X) | (X) | X | X | X | X | N | D |
| 1878 | X | X | D | X | X | X | X? | D | X | N? | | X | D | X | X | X? | X | (D) | X | N | D | X | D | X | X | D | X | (D) | X | X | X | X | D | X | X | X | X | D | X | X | X | D | (D) | X | X |
| 1879 | D | D | D | (D) | X? | N | X | D | (D) | X | D | D | D | D | X | (D) | D | D | (D) | (D) | N | D | X | D | D | D | D | X | D | (D) | D | D | D | (D) | D | N | X? | X | D | D | D | (D) | D | D | D |
| 1880 | D | D | D | D | D | (D) | D | D | D | D | D | D | D | D | D | D | X? | N | D | D | D | X | D | D | D | D | N | D | D | D | D | X | X | D | X | D | X | D | D | D | D | N | D | D | D |
| 1881 | D | N | X | X | D | D | X | X | X | N | D | D | X | D | D | D | D | X | X | X | (D) | X | X | X | N | D | D | X | N | D | D | N | X | X | X | (D) | X | X | X | N | D | D | X | D | D |
| 1882 | D | D | D | D | D | D | (D) | D | N? | X | D | D | D | N? | D | X | X | D | D | D | X | D | D | N? | X | X | D | D | X? | D | X | D | D | D | D | X | D | D | N? | X | N? | D | D | D | N |
| 1883 | X | D | N? | (D) | D | X | N? | X | D | D | D | D | N | D | D | X | X? | D | X | D | X | D | N | D | N? | X | D | N? | D | X? | X | D | D | N? | D | X | D | X | D | N? | D | D | N | D | X? |
| 1884 | X? | D? | (D) | D | D | D | N? | D | X | D | N? | D | D | D | D | X | X | X | D | D | X | N? | N? | X | D | D | D | D | D | D | X | N | (D) | D | D | D | N? | D | X | D | D? | D | D | D | D |
| 1885 | (X) | X | N | D | X | X | D | X | X | X | X | X | N | X | X | X | X | N | X | X | X | D | X | X | X | X | D | D | X | X | X | X | N | D | X | (X) | D | X | X | X | X | N | D | D | N |
| 1886 | X | N | X | D | X | X | N | X | D | X | D | D | D | D | N | X | N | X | D | N | X | N | X | D | X | X | D | X | D | D | X | N | X | D | X | X | N | X | D | X | X | D | X | D | X |
| 1887 | X | D | D | D | D | X | D | D | X | N | X | D | D | D | D | X | D | D | D | D | X | N | D | D | N? | D | D | D | D | D | X | D | D | X | D | X | D | D | D | N? | X | D | D | D | D |
| 1888 | X | X | D | D | D | D? | D? | D | N? | D | (X) | N? | D | D | D | X | X | D | D | (D) | X | X | N | D | D | D | X? | D | D | D | X | (X) | D | (D) | D | N? | N? | D | D | D | X | D | D | D | (D) |

meteorological data, it would be well to warn the reader that he must not expect too close a parallelism between *average* favourable weather conditions and indications of rust prevalence. Cloud and rain, at particular seasons (especially January to March), are together very favourable conditions for the attack of cereals by the fungus; but a very few days of each would suffice for attack, and these days might not bring the average cloud proportion and rainfall of the month up to a normal standard. Still, on the whole, we would expect to find a decided, though not perhaps a close, parallelism, and this, I think, the data disclose.

(To be continued.)

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Explanation of Plate 316.—Fig. 1, *Puccinia graminis* (Rolli), Jeypur; 2, do., (uredospore); 3, *P. rubigo-vera* (Loam), Gilghit; 4, do., Gujrat; 5, do., (Rolli), Jeypur; 6, do., Simla; 7, do., Shali, near Simla; 8, do., Dumraon—all × 350. 9, *P. rubigo-vera*, copied from Frank, × 200; 10, healthy wheat (10 grains); 11, diseased wheat (*P. graminis*), 25 grains; 12, do. (*P. rubigo-vera*), 60 grains; 13, do. (from Dumraon), 20 grains.

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# NOTES ON THE FLORA OF SUFFOLK.

By Arthur Bennett, F.L.S.

The publication of Dr. Hind's *Flora of Suffolk** calls attention to a county which I believe has not yet been sufficiently explored. The sandy "brick-lands" have not yet yielded all that is to be found on them; and among aquatics I feel confident that other discoveries will be made. Careful and continuous searching is especially required in the extreme N.E. portion of the county for aquatics; and such species as *Potamogeton zosterifolius*, *P. acutifolius*, *Naias marina*, *Chara stelligera*, &c., will probably reward the searchers. I have made the following notes in looking through the Flora, and I add a few localities. Watson = H. C. Watson's *Geographical Distribution of British Plants* (1843): for localities followed by ! I am responsible.

*Myosurus minimus* L. Marshes near the Gipping, at Ipswich, *Watson*.

*Ranunculus hederaceus* L. Local about Ipswich. Belton Bog, *Watson*. Between Yarmouth and Burgh, by the river !—*R. fluitans* Lam. River at Brandon !—*R. arvensis* L. Bungay, *Watson*.

*Aquilegia vulgaris* L. Brettenham, in hedges, *Ch. Babington*.

*Helleborus viridis* L. Stradbrook, *Watson*. — *H. fœtidus* L. Chedbury, *Miss Bell; Watson*.

*Berberis vulgaris* L. Plentiful by the road-side between Elveden Hall and Icklingham !

*Sisymbrium polyceratium* L. I have a specimen labelled "29/7/88, E. M. Holmes." A fuller account of the plant is given in *New Bot. Guide*, p. 592.

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* Reviewed in *Journ. Bot.* 1890, 92.

*Cochlearia danica* L. There is a specimen in Herb. Dillenius at Oxford, from Sherard, gathered at Orford.

*Dianthus Armeria* L. I have a specimen collected at Lakenheath in 1863 by C. F. White.

*Silene Otites* Sm. Abundant near the Windmill at Lakenheath! Between Elden and Icklingham, by the road-sides, in plenty!

*Holosteum umbellatum* L. The reference to the Addenda in Henslow & Skepper's *Flora* is omitted after "Plentiful on walls at Eye," and I am erroneously made voucher for its occurrence.

*Medicago minima* Lam. Much more abundant in District 1 than the *Flora* suggests. In May the banks are often quite yellow with its flowers!

*Lathyrus montanus* Bert. (*macrorrhizus* Wimm.). The extreme rarity, or almost total absence of this plant in Norfolk, Suffolk, and Cambridgeshire is curious; I believe I saw it in North Norfolk some years ago, but have no specimen.

*Œnanthe crocata* L. is another instance; three localities are given, but all are doubtful.

*Rubus erythrinus* Genev. Polstead Marsh, *E. F. Linton; Journ. Bot.* 1890, p. 206.

*Epilobium roseum* Schreb. Rayland, *E. F. Linton; Journ. Bot.* 1890, p. 4. — *E. tetragonum* L. Near Eye, *Marshall; Journ. Bot.* 1890, p. 144.

*Œnanthe pimpinelloides* L. The two localities given from Henslow & Skepper probably belong to *Œ. "silaifolia"*; they are most unlikely ones for *pimpinelloides*, the occurrence of which in the county is, I think, doubtful: it is not a plant of bogs or marshes. I have not seen either species in the county, though I have often sought for them.

*Peucedanum palustre* Mœnch. Belton Bog, *J. Paget*!

*Artemisia campestris* L. Two forms of this occur; the one at Thetford is much more robust and has coarser leaves than the plant that grows on Icklingham Plains; they can be distinguished in winter, as in summer.

*Senecio palustris* DC. Belton, "*Britten*":* the reference should be to *New Bot. Guide*. The plant is a biennial, not perennial, both in a wild state and in cultivation.

*Hieracium boreale* Fr. Monkswood, Felsham, *Record Club Report*, 1875, p. 124.

*Lithospermum purpureo-cæruleum*. "Bergholt," *Henslow & Skepper*; omitted by Dr. Hind.

*Orobanche caryophyllacea* Sm. Has this really occurred in the county? At the time of Henslow & Skepper's record, *O. Hederæ* and *O. elatior* had been erroneously recorded for it in other counties. When growing, no one could mistake it for either, but they are difficult plants to distinguish when dried.

*Melampyrum sylvaticum* L. Must surely be an error.

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* [I cannot imagine how my name became associated with this species, for I have never botanised in Suffolk, and have never seen it growing.—ED. JOURN. BOT.]

*Salvia Verbenaca* L. I have a specimen collected at North Cove, near Beccles, in 1837, by Priest.

*Ophrys aranifera* Huds. *Herb. Borrer.*

*Ornithogalum nutans* L. Ufford, near Woodbridge, April, 1873, *Rev. H. H. Crewe.*

*Allium ambiguum* Sm. Sp. in *Herb. Borrer.*

*Potamogeton polygonifolius* Pour. Belton Bog, *Paget in Herb. Watson*! — *P. Friesii* Rup. "*mucronatus.*" Herringfleet, 1801, *Herb. Kew*!

*Carex muricata* L., var. *pseudo-divulsa.* Barningham, *E. F. Linton; Record Club Report*, 1883.—*C. teretiuscula* Good. Lakenheath! *Chara aspera* Desv. Kessingland, *Hind*!

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## NOTES ON BRISTOL PLANTS.

By James W. White, F.L.S., and David Fry.

This paper contains a notice of species not included in the *Flora of the Bristol Coal-fields*, or notes supplemental thereto published in the *Transactions of the Bristol Naturalists' Society*. A few lately-discovered additional stations for rare and local plants are also given. It will be seen that the notes in great part refer to newly-differentiated forms of *Rubus* and *Hieracium*, upon which intricate genera the energy of field botanists is at present being largely expended. Some of these forms, although known upon the Continent, do not appear in the *London Catalogue*, and have not been described by British authors. The capital letters G. or S. mark the divisions of the district as defined in the *Flora*, and refer respectively to the vice-counties of West Gloucester and North Somerset. Vice-comital records are marked *.

*Erysimum repandum* L. G. On rubbish in St. Philip's Marsh, Bristol, the last three years, in plenty. Casual. A native of Central Europe.

**Rubus opacus* Focke. S. On the peat-moor near the railway between Edington and Ashcot. Abundant, but not recognised before September last, when some capital specimens were gathered and submitted to the Rev. W. Moyle Rogers. This bramble is intermediate between *affinis* and *plicatus*. It produces abundance of fine fruit, and is a handsome plant, far stronger than our southern *plicatus* ever becomes. Some panicles, gathered at the time named, measured over 2 ft.; and leaves of the barren shoot attain the length of 9 in. The basal leaflets of the latter are distinctly stalked, the panicle is unarmed, and the sepals for the most part are roundish oval, with short points. The sepals of *plicatus*, on the contrary, are commonly prolonged at the tips into linear points of great length.

*R. affinis* W. & N. S. On the peat-moors near Edington and Shapwick. Here quite typical, being identical with the Dorset plants which Dr. Focke refers to in his 'Notes on British Rubi,'

published in *Journ. Bot.*, April, 1890, as corresponding almost exactly with the German *affinis* that he had seen at Weihe's original stations.

**R. Cariensis* Rip. & Genev. S. Occurs abundantly on the peat-moors near Shapwick. A very remarkable bramble, connective, apparently, of *affinis* with the *Rhamnifolii*. A similar form found by the Rev. W. Moyle Rogers in great quantity near Lynton, N. Devon, in 1881, was referred to *Cariensis* by Dr. Focke. The stem is erect-arcuate, pilose, with quinate leaves. Terminal leaflet rhomboidal-roundish, or orbicular, subcordate, subcuspidate. Panicle lengthy in proportion to the usually rather short flowering shoot, with long ascending many-flowered corymbose branches, the upper ultra-axillary ones often greatly exceeding the terminal flower. Petals bright pink. Filaments pink, exceeding the green styles. Fruit of moderate size, black, abundantly produced.

*R. imbricatus* Hort. Until lately there was but one locality known near Bristol for this rare plant. In August last it was found in two or three spots on the edge of Syston Common, several miles from the original station in Glen Frome. All are in West Gloucester.

*R. erythrinus* Genev. Mentioned under *R. Lindleianus* in *Fl. Brist. Coalf.* p. 58, as an unnamed form, some years before Mr. Briggs published a description in this Journal. The plant is frequent and abundant about Bristol, and varies little, except in the amount of felt with which the panicle is clothed. The lower axillary panicle branches lengthen out greatly by the time the fruit is ripe. Leaves of the barren shoot are often ternate. G. In plenty by the Avon under Sneyd Park, extending as far as the Black Rock Quarry. By the "Arbutus Walk," Henbury. Abundant about Hanham. Mangotsfield and Syston Commons. *S. Leigh Down. Between Brislington and Keynsham. Compton Dando.

**R. argenteus* Weihe. Grows plentifully in two widely separated localities in North Somerset, *viz.*, in hedges at Brislington, and in a lane near the River Chew, between Woollard and Compton Dando. Although closely allied to *erythrinus*, as pointed out by Dr. Focke, there are points of difference that readily distinguish the two; notably the hairy stem of *argenteus*, its white-felted foliage, and the constant presence of setæ upon the panicle. No glands have been seen on the *erythrinus* of this neighbourhood. Moreover, the inflorescence of the latter is subpyramidal in outline, and closer than the long leafy cylindrical panicle of *argenteus*. Petals pale pink. Filaments white, about equalling the green styles.

**R. pubescens* W. & N. Rather frequent in hedges at Berrow, N. Somerset. Named by Mr. J. G. Baker.

*R. rusticanus* × *leucostachys*. One bush of this grows on Leigh Down, N. Somerset, near the Water Company's reservoir.

*R. rusticanus* × *corylifolius*. A small patch on the right bank of the stream in the valley just below Wyck Rocks, West Gloucester. Determined by Mr. Moyle Rogers. Hybrid Rubi are rare in the West of England. The two above mentioned are all that have been observed in the large area of the Bristol Coal-field.

**R. mucronatus* Blox. G. Near the Black Rock Quarry, bank of Avon, Clifton; and in woods at Hanham above Bristol. The Clifton plant differs from the type in having both barren stem and panicle unusually hairy, setose, and aciculate. This species is rare in the Bristol district, and hitherto met with only at Clevedon and near Pensford, N. Somerset.

*R. Bloxamii* Lees. S. Sparingly on the peat-moor near Burtle. The late Mr. Briggs and Dr. Focke concurred in regarding this as quite satisfactory *Bloxamii;* both of them, however, remarking that the serrature of the leaves was shallower than usual.

*R. scaber* W. & N. *G. Specimens from the Wyck Valley, and from near the railway under Sneyd Park, Clifton, have been named *scaber* by Mr. Moyle Rogers. These are off type in some respects. S. A plant from the peat-moor near Shapwick, of somewhat unusual appearance, owing to soil and situation, was accepted as *scaber* both by Prof. Babington and Dr. Focke. See *Exch. Club Report* for 1889. Typical *scaber* seems to be seldom met with. It may be in place to mention here the later vicissitudes of a bramble, abundant on the skirt of Leigh Wood, that first came into notice as *R. scaber* in *British Rubi*. Its eventful history, up to date of that paper, is given by the Rev. R. P. Murray in his *Notes on Somerset Rubi*. Subsequently, in the *Exch. Club Report* for 1886, both Prof. Babington and Dr. Focke agreed that the plant was *R. Babingtonii* Salter, an apparent settlement grateful to local botanists. But in *Notes on British Rubi*, Dr. Focke, writing on *R. fuscus* W. & N., says that the English state of that species is plentiful in Leigh Wood. From this it was suspected that the old unrestful item had risen again; so, through the kindness of Mr. Rogers, more specimens were submitted to Dr. Focke, and he has just reported on them, "*R. fuscus* W. & N." This experience teaches how helpful to the expert is an inspection of the growing plant.

**R. Kaltenbachii* Metsch. Observed during the last three summers near the Avon, under Sneyd Park, Clifton, West Gloucester. Its determination is due to the Rev. W. Moyle Rogers, who says he knows it only from one other British station. Among the more remarkable features of the plant is a long pyramidal panicle tapering regularly and gradually to an acute point formed of a single flower. Stamens very long, at least double the length of the styles. Petals pale pink.

*Epilobium Lamyi* Schultz. *G. Hanham. On colliery waste near Kingswood. *S. Corston. The plants from all these localities agree well with specimens gathered and sent out by Wirtgen.

*E. lanceolatum* S. & M. G. The area in the Bristol district of this rare and local species is extended by its discovery last August on a rocky bank near Mangotsfield.

*Hieracium Schmidtii* Tauch. The Rev. E. F. Linton has lately subjected the Hawkweeds growing in the Cheddar Gorge, S., to close examination. From him we learn that what was published in the *Flora* under *H. murorum* is really divisible into several named forms—*Schmidtii* being one, and the next item another. See *Journ. Bot.* Sept. 1891, pp. 271–3.

*H. stenolepis* Lindeb. At Cheddar, with the last, *E. F. Linton.*

*H. diaphanoides* Lindeb. A plant allied to *vulgatum.* Abundant on the rocky bank at Mangotsfield Station, G., and first recognised by the Rev. E. F. Linton. See *Journ. Bot., loc. cit.*

*H. orarium* Lindeb. G. Occurs in plenty on St. Vincent's Rocks, and about the railway by the river-side adjacent; first gathered and distinguished by Mr. Linton. See *Journ. Bot., loc. cit.* On a wall at Sneyd Park, Clifton. On old colliery waste near Kingswood. *S. On limestone, Leigh Down.

*Gnaphalium sylvaticum* L. A very rare Bristol species, recorded in the *Flora* only from Downhead Common. The Rev. W. S. Browne, of Stanton Prior, however, has found at intervals during the last ten years a single plant in Lord's Wood, Houndstreet; and in Aug. 1890, Mr. L. W. Rogers pointed out four specimens in a wood near Weston-in-Gordano, where he had discovered the plant in the previous autumn. The places named are all in N. Somerset.

*Rumex palustris* Sm. In N. Somerset. Not published in the *Flora.* The plant and its near ally, *maritimus*, are quoted for vice-county 6 in *Top. Bot.*, on the authority of different observers; one standing as "Clark sp.," and the other, "Collins MS." It looks as if neither botanist recognised them both. And, on the Somerset peat-moors, where the two species undoubtedly grow intermingled, it is certainly far from easy to make out the distinctive characters of both at the same visit, chiefly because *palustris* flowers a month later than its fellow, and is not in good fruit until *maritimus* is withered and in bad order for comparison. Babington's *Manual* gives July and August as the time for the latter, and July to September for the former. In this district it has been found that *R. palustris* does not reach maturity before September. At that period, although, as Dr. Boswell remarks, the whorls of *palustris* are sometimes confluent as in the other, yet the greater size of its nuts and much shorter setaceous teeth on the enlarged sepals make distinction plain. But anyone visiting the moors in July or August could scarcely come to a satisfactory conclusion on the presence or absence of the subject of this note.

*R. acutus* L. G. Hanham. S. Corston. Keynsham. Newton St. Loe. Quite sparingly at all the localities, and usually associated with *R. crispus* and *R. obtusifolius.* Dr. Boswell states that he had never been able to find more than three or four nuts on plants of *acutus;* but observations made with reference to this point bear out Prof. Babington's remark that the nuts are produced in abundance, although in the plants examined there appeared to be more perianths in which nuts were not perfected than in the case of *R. obtusifolius.* The nuts of the latter are appreciably smaller than those of *acutus.*

*Carex montana* L. An addition to the Flora. The discovery of this sedge on the Mendip Hills, N. Somerset, by the Rev. E. F. Linton, is described in *Journ. Bot.* 1890, p. 350.

*Apera Spica-venti* Beauv. G. Casual on old colliery waste near Kingswood, 1882; and on rubbish in St. Philip's Marsh, Bristol, 1888, 1889.

# *CUSCUTA EPITHYMUM* IN IRELAND.

By A. G. More, F.L.S.

A few weeks ago I received from Mr. J. Ernest Grubb, of Carrick-on-Suir, some specimens of a *Cuscuta*, which he sent to me as *Cuscuta Epithymum*. Upon my asking for further details, Mr. Grubb has very kindly supplied me with a fine series of fresh specimens, together with the interesting information that the Dodder grows in considerable abundance at the west end of the sand-hills, on the Rabbit Burrow near Tramore, Waterford; parasitical chiefly upon *Thymus*, but some of the specimens sent to me were attached also to *Lotus corniculatus*, *Trifolium repens*, and *Galium*. Mr. Grubb first noticed it in this locality in 1886, and has observed it for several years in the same neighbourhood, always on wild thyme, and extending over a considerable area. There is no furze growing near, and the Dodder grows on a part of the sand-hills where there never appears to have been any cultivation.

In its red colour, and in the small size of the clusters, the plant agrees well enough with *Cuscuta Epithymum*, which I think must now definitely take its place in the Irish Flora. And I am inclined to refer also to *C. Epithymum* the *Cuscuta* which was gathered by my friend Mr. R. W. Scully in 1887, growing abundantly over the space of an acre or two, on a remote part of the Banna sand-hills in Kerry (see *Journ. Bot.* 1888, p. 76), though at the time we were inclined to think this might be a colony of *C. Trifolii* escaped from cultivation.

As a third Irish locality for *C. Epithymum* we may probably add Threlkeld's record under *Cuscuta major*:—"This herb groweth in great plenty in the dry sandy banks near Mayden Tower, near Drogheda, and grows like red threads on the tops of the low grass." Mayden Tower lies on the south bank of the River Boyne, near its mouth, and though I have once searched unsuccessfully for it, I should not be surprised if the Dodder might be re-discovered.

The other Irish localities, including those of Ballybrack and Fassaroe, must, I believe, be referred to *C. Trifolii*, which sometimes persists for a few years in or near to the fields in which it has been originally sown with the clover crop. *C. Epithymum* will then be left as a native of Ireland growing only, so far as we know at present, in three distant localities on the coast in the counties of Kerry, Waterford, and Meath, and inhabiting only sea-side sand-hills.

[We have in the British Museum specimens of *Cuscuta Epilinum* from Renvyle, Connemara, collected by Shuttleworth in 1832.—Ed. Journ. Bot.]

# A NEW BRITISH *RUBUS*.

By the Rev. R. P. Murray, M.A., F.L.S.

**Rubus Durotrigum**, n. sp.—R. caule prostrato (vel scandente) aculeis parvis e basi longa compressa declinatis, aciculis setisque inæqualibus crebris, foliis quinato-pedatis vel raro ternatis, foliolis subæqualibus, latis, acuminatis, grosse dentato-serratis, subtus in venis tantum parce pilosis, foliolo terminali cordato- vel subcordato-ovato-acuminato; paniculæ angustæ foliosæ ramis brevibus distantibus, rachide flexuosa, aculeis tenuibus declinatis, pilis setisque inæqualibus munitis, sepalis ovato-acuminatis aciculatis setosis tomentosis patentibus vel a fructu laxe reflexis.

Stem prostrate when unsupported, angular, glabrous, densely prickly, aciculate and setose, bright red when exposed to the light. Prickles slender, declining from a long compressed base, almost confined to the angles. Aciculi resembling the prickles, passing gradually into abundant setæ. Leaves subpersistent, quinate-pedate or rarely ternate, thin, flexible, pale green, especially beneath, almost glabrous above, and only very slightly hairy on the veins beneath, strongly dentate- (or lobate-) serrate. Leaflets remarkably broad, sometimes slightly imbricate: terminal leaflet broadly ovate-acuminate or almost orbicular, with cordate or subcordate base; petioles armed and coloured like the stem. Stipules linear, ciliate, setose, adnate to the petiole. Panicle long, with distant short ascending or subpatent axillary branches, and narrow ultra-axillary top. Terminal pedicel short. Sometimes, but rarely, the lowest branch of the panicle may slightly exceed its subtending leaf. Leaves ternate; leaflets like those of the barren stem, except that the terminal one is sometimes narrower in proportion and generally not cordate at the base. Upper simple floral leaves sharply triangular with acute dentate serrate teeth. Rachis distinctly wavy, armed and coloured like the stem, only still more thickly clothed with setæ and aciculi, and with some hairs intermixed. Petals small, distant, clawed, caducous, pinkish. Stamens white, clasping and hardly equalling the styles, which are at first greenish, and ultimately red. Sepals thickly felted, setose and aciculate, ovate-attenuate, patent or loosely reflexed from the fruit. Young carpels pilose. Flowers in July and the early part of August.

A very handsome plant, remarkably constant in its characters. It does not appear to me to be very closely allied to any previously described species. Probably its nearest affinities are with *R. rosaceus* and *R. Bloxamii*. The latter plant grows abundantly in the same district, but I have never found *R. rosaceus* anywhere near it. Some years since I sent it to Dr. Focke, who remarked that it seemed to be near *R. lamprophyllus* Gremli, a Swiss and Bavarian plant, but it does not at all agree with the description of this form, and Dr. Focke has not repeated the suggestion in succeeding years. Prof. Babington did not know it when I showed it to him a year ago, nor has any other specialist who has seen the plant been able to recognise it. It grows abundantly for a space of quite two miles

along old lanes and in bushy ground adjoining Charlton Down, about three miles south of Blandford, in Dorset; and I have seen a specimen collected by Mr. Mansel-Pleydell near Whatcombe, some three miles further west. Both these localities are on the chalk. It has also been found by the Rev. E. F. Linton by the road-side between Bailey Gate and Hamworthy Junction, six or seven miles to the south-east of Charlton Down, on the tertiary heath-lands. I have been unable to detect any difference in the plants consequent on the difference of soil.

The specific name which I have adopted refers to the Durotriges, a people who formerly occupied this part of the country. My thanks are greatly due to the Rev. W. Moyle Rogers for assistance in drawing up the specific description.

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## BIOGRAPHICAL INDEX OF BRITISH AND IRISH BOTANISTS.

This Index, which has been published in this Journal during the last four years, has elicited much more general interest than its compilers expected. It originated in the supposition that the want of such a reference-list to byegone workers in Botany, which we ourselves had often felt, might also be shared by others; and the very numerous expressions of interest and approval which we have received have shown that we were fully justified in our belief.

During its progress through the pages of the Journal, we have made numerous additions to the names, as well as to the information given, and some corrections. We have been encouraged to think that a reprint of the list, embodying these additions and corrections, and brought down to the end of 1891, would be convenient for those who find it somewhat difficult of consultation in its present form, and would also serve as a handy volume of reference for others specially interested in Botanical Biography.

So far, however, the support obtained has been hardly sufficient to justify us in proceeding with the work; but a growing sense of its importance has determined us to prepare it for press, in the belief that many who have not already sent in their names as subscribers will do so now that their attention is again called to it. It is hoped that the volume will be issued to subscribers by the end of June, at the price originally announced—*viz.*, 3s. 9d. per copy, post-free. We find, however, that this will not allow us to incur the expense of binding, but this is of the less importance, as many will no doubt interleave the work for the incorporation of additions, &c. On publication, the price of the remaining copies out of the 500 to be printed will be considerably raised.

We shall be glad to receive corrections and additions to the list as printed in this Journal, for incorporation in the reprint. Intending subscribers should forward their names, with the amount of subscription, to the Publishers of this Journal, with as little delay as possible.

James Britten.
G. S. Boulger.

# NEW PAPUAN PLANTS.

Described by Baron Von Mueller, K.C.M.G., &c.

(Continued from Journ. Bot. 1891, 176.)

**Acronychia lobocarpa**, sp. n. (Euodia lobocarpa F. v. M. MS.).—Glabrous; leaves comparatively small, on rather long and slender petioles; trifoliolate or some unifoliolate; leaflets provided with very short or hardly any petioles, thinly chartaceous, mostly obovate, but at the base much narrowed, at the margin entire or faintly and imperfectly crenulated; peduncles slender, mostly axillar, three-flowered or cymosely few-flowered; calyx quite minute, deeply and rather bluntly four-lobed; petals four, small, linear-elliptical, at the summit inflexed; stamens much shorter than the petals, their filaments subulate-linear; style rather short, as well as the ovulary, glabrous; stigma capitellate, hardly lobed; fruit quite small, dry, rather conspicuously four-lobed, imperfectly dehiscent towards the summit; seeds solitary in each cell.

On Mount Yule, with *Euodia Elleryana*.

Leaves usually 1–1½ in. long. Petals only of ⅛ in. length. Style terminal. Fruit somewhat broader than long. Endocarp thin. Seeds oblique-ovate, outside dark-coloured and somewhat rough. Albumen copious. Cotyledons flat. Merely one flower was available, and that certainly had only four perfect stamens, although between two of them occurred the rudiment of a fifth; the filaments in this instance were glabrous, but those adhering still to some fruits were found to be eight in number, and had ciliolated filaments; but this may have been a case of casual variability, not depending on partial unisexuality.

This species differs from the New Caledonian *A. Lawsonia*, according to Turpin's delineation, in the following characteristics:—the leaves are usually compound and provided with longer petioles, the leaflets are smaller, but towards the summit broader, the stamens and style are shorter, and the fruit is remarkably lobed. From the Polynesian *A. retusa* the Mount Yule plant differs also in smaller and mostly trifoliate leaves, longer pedicels, elongated style, and probably also in form of fruit.

This new plant particularly demonstrates the close affinity of the genus *Acronychia* to *Euodia*, and certainly the two should stand systematically not far apart from each other. This observation applies of course to *Euodia* in the wider sense, including *Melicope*, an extension of the genus adopted already, 1860 (*Fragm. Phytogr. Austr.* ii. 102), in which I was followed by Baillon, 1873 (*Hist. des Plantes Rutacées*, p. 469). That the double number of the stamens in *Melicope* would be a very feeble generic note is shown by the genus *Boronia*, of not very distant affinity, in which some few species with four sterile stamens occur (just as in one *Euodia*), thus rendering also *Zieria* hardly tenable beyond a subgeneric position.

(To be continued.)

# A NEW BRITISH *HIERACIUM*.

By the Rev. Edward S. Marshall, M.A., F.L.S.

**H. anfractiforme**, n. sp.—*Stem* 9–20 in. high, simple or (in luxuriant specimens) branching from below the middle, rigid, fistular, glabrous below, becoming floccose upwards, and bearing a very few stalked glands. *Branches* rigid, ascending, *Root-stock* woody, with rather numerous, stoutish fibres. *Root-leaves* firm in texture, glabrous and bright green above with prominent pellucid veins, sometimes slightly glaucous-tinted, their margins with a few weak patent hairs, pale beneath, with scattered hairs; from linear-lanceolate to lanceolate or oblanceolate in outline, acute or apiculate. Blade 2–4 in. long, very gradually tapering into a long (1–2½ in.), slender, hairy petiole, strongly dentate or sharply incised. Teeth pointing forwards, gland-tipped, narrowly triangular or linear, the longest (lowest) sometimes exceeding ½ in. in length, from 5 to 10 on either side. *Stem-leaf* one (rarely two on strong plants), stalked, very deeply cut into linear segments or but slightly toothed, reduced to a linear bract in small specimens. *Peduncles* ½–1½ in., erect or ascending, somewhat floccose, darkened in their upper part by numerous stalked glands. *Heads* 1–4, when the stem is simple; when branched, the branches bear from 1–4 heads apiece. *Involucre* cylindric in bud, campanulate in flower; phyllaries very dark with black-based hairs and stalked glands, woolly-tipped with white down before the flowers open, with a scarious border, obtuse, gradually narrowing from their base. *Flowers* golden-yellow, about 1¼ in. across when fully expanded; tip of the ligules ciliate. *Styles* rather livid with minute dark hairs. *Achenes* chestnut-coloured.

*Habitat:* Rocky subalpine streamlets of the Western Breadalbanes, on granite and mica-slate, from 1400 to 1800 ft.

I first met with this species in June, 1888, by a burn descending from Clach Leathad, Glen Etive, Argyle, and was much struck by its distinct look. The following summer, I again found it in Corrie Ardran, near Crianlarich, Perthshire. Mr. F. J. Hanbury visited both stations in my company, and we agreed in thinking it different from any form hitherto known in this country. *H. anfractum* Fr., as represented in Lindeberg's Scandinavian sets, appeared to resemble it very closely, and specimens were sent to Dr. Lindeberg under that name. About those from Glen Etive he wrote:—"Primo obtutu videtur forma scaposa *H. anfracti*, at involucra et lata anthela demonstrant, eandem esse aliam *novam* formam"; while he reported on the Perthshire ones thus:—"Species nova, a ceteris bene distincta videtur."

Dr. Buchanan White has collected the same plant on the Argyle side of Ben Laoigh; and, although I have forgotten the exact date of his discovery, I believe that it somewhat precedes my own. Mr. Hanbury also informs me that it was found last summer by Dr. W. A. Shoolbred, near the road between Glen Lyon and Tyndrum.

Occasionally *H. anfractiforme* has a certain look of *H. argenteum* Fr., from which, however, it differs in many essential points. The only other British form that I have seen, with which it is likely to be confounded, is one that I have gathered with Mr. Hanbury on Ben Laoigh, and with Messrs. Linton on one of the Glen Lochay hills. This approaches it by the golden-yellow flowers and deeply toothed or incised leaves, but is of a taller and more straggling habit, has longer and more curved peduncles, longer, more numerous, and floccose-bordered phyllaries, very dark styles, &c.; the leaves are also *yellowish* green, thinner, broader, with more patent teeth, and they are more abruptly narrowed into the petiole.

I have abstained from adding this to our rapidly growing list as a new species, until it had been well tested by two or three seasons' cultivation, both in my own and other gardens. This ordeal has been passed through very satisfactorily, no important variation having occurred. If anything, the wild characters are accentuated in a richer soil; the flowers, as is natural, being more abundant, and the peduncles greyer with floccose down, a change probably due to the softer air and more sheltered situation. Messrs. Linton have also found it to come "true" from seeds sent by me.

I entirely agree with Mr. Beeby's recent remarks under *H. zetlandicum*, and had placed all my gatherings at Mr. Hanbury's disposal to deal with as he thought fit. However, he now writes to me as follows:—"I am shortly going to write a further little paper on *Hieracia*, in continuation of my notes which have from time to time appeared in the *Journal of Botany*, embracing the work that has been done during the last three years. The plant which we have often spoken of as *H. anfractiforme* has, however (with the exception of a single specimen sent me without a name by Dr. Buchanan White), been so specially your own discovery, and I am so entirely satisfied as to its meriting specific rank, that I shall esteem it a favour if you will publish it in your own name, prior to the publication of my paper."

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# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

An attempt has been made in the following pages to extract from printed botanical works published in Great Britain the earliest notice of each distinct species of our native and naturalised flowering plants, and thus to supply information seldom to be found in any of the numerous floras of the country now available for reference.

In such an undertaking some limits have to be observed; and first, it will probably be generally allowed that the earliest works affording definite information on this subject are those of William Turner, commencing with his *Libellus de re herbaria novus*, published in 1538. With regard to some plants, especially trees,

earlier notices may, of course, be found, but these have been disregarded for the present purpose, and all researches limited as above mentioned.

As to the species included in the list, no attempt has been made to distinguish precisely between indigenous and introduced plants; but the last edition of the *London Catalogue* has been taken as a basis, and the earliest record has been sought of each separately numbered species, but excluding (1) the evidently introduced plants printed in italics, (2) those only found in the Channel Islands, which cannot properly be considered British: In the critical genera—*Rubus*, *Hieracium*, and *Salix*—a selection only of generally recognised forms has been given.

A difficult matter to decide in many cases has been—What is a sufficient first record? a plant being often vaguely mentioned in an old Herbal without locality or any clear indication that it was known to the writer as British. It has been found impracticable to lay down any precise rule in such cases, but where the plant under consideration is a common one and well known to be indigenous, a mere reference to it by any name which can be identified has been accepted as a sufficient record, unless there appeared some reason to doubt whether the writer knew it as British. For example, in searching for a first record of *Anemone nemorosa* we find the plant pretty clearly referred to by Turner in his *Herbal* as a kind of *Ranunculus;* there is no evidence in the description that he knew it as a British plant, but there can be no reason to doubt it. The *Herbal* contains a good figure of the plant, and Turner says it grows "in woddes and shaddish places in April." This is enough. In other cases, of course, greater care has been taken to obtain a record containing some internal evidence that the plant was known to the writer as British; and in some instances where the earliest record is unsatisfactory but cannot be altogether rejected, a second later and more satisfactory one has been added.

In this work I cannot hope to have attained anything like completeness. It has been carried on for the most part at a distance from any extensive botanical library, and corrections, which, it is feared, will be numerous, are invited from all interested in the subject.

I have obtained some assistance from a MS. by the late Dr. Pulteney in the Botanical Department of the British Museum, containing short references to the early notices of British plants known in his day: but in many cases the references are not to actual first records, and in other respects the information afforded is not always satisfactory.

Throughout the work I have received the kind encouragement and assistance of the Editor of this Journal, without which, indeed, it would not have been undertaken at all. I am also greatly indebted to Mr. Daydon Jackson, Mr. G. S. Boulger, and Mr. F. C. S. Roper for the loan of books and other assistance.

The principal works referred to, with the abbreviations used, are enumerated below: other books, occasionally quoted, will be sufficiently indicated where cited.

*Ann. & Mag. N. H.* Annals and Magazine of Natural History, 1st series, 1838–47; 2nd series, 1848–57; 3rd series, 1858–67; 4th series, 1868–77.

*Bab. Man.* Manual of British Botany. By C. C. Babington, F.R.S., &c. Various editions, specified when cited.

*Baxter.* British Phænogamous Botany. By William Baxter.

*Blackst. Fasc.* Fasciculus Plantarum circa Harefield sponte nascentium. 1737.

*Blackst. Spec.* Specimen Botanicum quo Plantarum plurium rariorum Angliæ indigenarum loci natales illustrantur. Authore J. Blackstone. Pharm. Lond. 1746.

*Bot. Gaz.* Botanical Gazette. Edited by A. Henfrey. 1849–51.

*Bot. Guide.* The Botanist's Guide through England and Wales. By D. Turner and W. Dillwyn. 1805.

*Curtis Fl. Lond.* Flora Londinensis. By William Curtis. 1777–98.

*E. B.* English Botany. By Sir J. E. Smith and James Sowerby. 1790–1814.

*E. B. Supp.* Supplement to the above. Vols. 1–5. 1831–65.

*Fl. Cambs.* Flora of Cambridgeshire. By. C. C. Babington, F.R.S. 1860.

*Fl. Midd.* Flora of Middlesex. By H. Trimen and W. T. T. Dyer. 1869.

*Ger.* The Herball or Generall Historie of Plantes. Gathered by John Gerard. 1597.

*Ger. em.* The above Herball. Enlarged and amended by Thomas Johnson. 1633.

*Hook. Br. Fl.* The British Flora. By Sir W. J. Hooker. Ed. 1, 1830; ed. 4, 1838.

*Hook. Fl. Lond.* Curtis' Fl. Londinensis. Continued by Sir W. J. Hooker. Lond. 1816–28.

*Hook. Fl. Scot.* Flora Scotica. By Sir W. J. Hooker. 1821.

*How Phyt.* Phytologia Britannica natales exhibens Indigenarum Stirpium sponte emergentium. [By William How, M.D.] Lond. 1650.

*Huds.* Flora Anglica. Lond. 1762, and ed. ii. 1778. By William Hudson.

*Johns. Kent.* and *Johns. Eric.* Iter Plantarum Investigationis . . . in Agrum Cantianum; and Ericetum Hamstedianum. 1629. By Thomas Johnson.

*Johns. Kent.* (1632) and *Johns. Enum.* Descriptio Itineris Plantarum investigationis . . . in Agrum Cantianum A.D. 1632, et Enumeratio Plantarum in Ericeto Hampstediano locisq. vicinis crescentium. 1632.

*Johns. Merc. Bot.* or *Merc. Bot.* "Mercurius Botanicus" of Tho. Johnson. 1634. Second part, 1641.

The three preceding are quoted from Ralph's Reprint of Johnson's *Opuscula*, published by Pamplin in 1847.

*Journ. Bot.* Journal of Botany, quoted by dates from vol. i. (1863) to the present time.

*Lightf. Fl. Scot.* Flora Scotica. By John Lightfoot, A.M. 2 vols. Lond. 1777.

*Lindl. Syn.* Synopsis of the British Flora. By John Lindley. Lond. (1829), and ed. ii. (1835).

*Linn. Soc. Trans.* Transactions of the Linnean Society. Lond. 1791, and in progress.

*Lob. Adv.* Stirpium Adversaria Nova. Auth. Petro Pena et Mathia de Lobel, Medicis Londini 1570.

*L. Cat.* The London Catalogue of British Plants. 8 editions. (1844–86).

*Merrett.* Pinax Rerum Nat. Brit. Auth. Christophero Merrett. 1666. (Quoted from the reprint of 1667).

*Park. Theatr.* Theatrum Botanicum . . . an Herball . . . by John Parkinson. 1640.

*Pet. Gram. Con.* Graminum, Muscorum, &c., Brit. Concordia. By James Petiver. Lond. 1716.

*Pet. Herb. Brit.* Herbarii Brit. clariss. D. Raii Catalogus. By James Petiver. Tab. 1-50, 1713; tab. 51–72, 1715.

*Phytol.* The Phytologist. Conducted by Geo. Luxford. 5 vols. 1841–1854. Ditto, new series. Edited by A. Irvine. 6 vols. 1855–1863.

*Pluk. Phyt.* Leonardi Plukenetii Phytographia. 1691–2.

*Ray C. C.* Catalogus Plantarum circa Cantabrigiam nascentium. [By John Ray.] Cambridge, 1660.

*Ray C. C. App. i. and ii.* Appendices to the above, dated respectively 1663 and 1685.

*Ray Cat.* Catalogus Plant. Angl. et Insularum adjacentium . . . Op. Joannis Raii. 1670, and ed. ii. 1677.

*Ray Hist.* Historia Plantarum. By John Ray. Vol. i. 1686, vol. ii. 1688.

*R. Syn.* Synopsis Methodica Stirpium Brit. Auct. J. Raio; ed. i. 1690, ed. ii. 1696, and ed. iii. [edited by Dillenius.] 1724.

*Rose.* The Appendix to the Elements of Botany. By Hugh Rose. 1775.

*Sm. Engl. Fl.* The English Flora. By Sir J. E. Smith. 4 vols. 1824–28.

*Sm. Fl. Brit.* Flora Britannica. Auct. J. E. Smith. 3 vols. 1800–4.

*Syme E. B.* English Botany. Edited by J. T. Boswell-Syme. Ed. iii. 12 vols. 1863–86.

*Turn.* William Turner's Herball. Part i. 1551, part ii. 1562, part iii. 1568. Quoted from the edition of the 3 parts, published in 1568; but in quotations from part i. the page in the original edition is also given, followed by that of the 1568 edition, in brackets, thus: Turn. i. 17 (42).

*Turn. Lib.* Libellus de re herbaria Novus. By William Turner. Originally published in 1538; reprinted in facsimile, with notes, &c., by B. D. Jackson, F.L.S. London, 1877.

*Turn. Names.* The Names of Herbes. By William Turner. 1548. Quoted from the E. D. S. reprint by James Britten. 1881.

*With. Bot. Arr.* A Botanical Arrangement of British Plants, &c. By William Withering, M.D., F.R.S., Birmingham. Ed. i. 1776; ed. ii., with references to figures, by Jonathan Stokes, M.D., 1787–92; and ed. iii. 1796.

**Clematis Vitalba** L. Sp. Pl. 544 (1753). **1548.** "Groweth plentuously betwene Ware and Barckway in the hedges."—Turn. Names, G. viij. back.

**Thalictrum alpinum** L. Sp. Pl. 545 (1753). **1690.** "In Alpibus Arvoniæ [Carnarvonshire] . . . D. Lloyd." — Ray Syn. i. 62. 4.

**T. minus** L. Sp. Pl. 546 (1753). **1660.** "About Newmarket," Cambs.—R. C. C. 162.

**T. majus** Crantz (Stirp. Austr. fasc. ii. 80 (1763). **1796?** "Discovered by Mr. E. Robson about 2 miles from Darlington," Durham.—With. Bot. Arr. ed. 3, 502. I am unable to trace the history of No. 4 in L. C. Is the above the same species?

**T. flavum** L. Sp. Pl. 546 (1753). **1597.** "Alongst the ditch sides leading from Kentish streete unto Saint Thomas Watrings, the place of execution, on the right hande" [Surrey]; also "upon the Thames bankes, leading from BlackeWall to Woolwich, neere London" [Kent.]—Ger. 1067.

**Anemone Pulsatilla** L. Sp. Pl. 539 (1753). **1551.** "Groweth . . . about Oxford in Englande as my frende Falconer tolde me." —Turn. i. 17 (42).

**A. nemorosa** L. Sp. Pl. 541 (1753). **1562.** "In woddes and shaddish places in April." — Turn. ii. 114, back (with a good figure).

**Adonis autumnalis** L. Sp. Pl. ed. ii. 771 (1762). **1548.** "I have sene it in Englande but very rare." — Turn. Names, B i. (under "Anthenus.").

**Myosurus minimus** L. Sp. Pl. 284 (1753). **1597.** "Groweth upon a barren ditch banke as you go from London to a village called Hampsteed; in a field as you go from Edmonton, a village neere London, unto a house thereby called Pims," &c.—Ger. 345.

**Ranunculus aquatilis** L. (aggregate). **1562.** "Swimmeth above the water in poules for the most parte of Summer." — Turn. ii. 114, back.

**R. circinatus** Sibth. Fl. Oxon. 175 (1794). **1794.** "Christchurch meadows" (Oxford).—Sibthorp, *l. c.*

**R. fluitans** Lam. Fl. Fr. (1778). **1839.** In Cambs., &c.—Bab. in Ann. N. H. iii. 229. First record by this name.

**R. pseudofluitans** Newbould ex Baker in Thirsk Bot. Exch. Club Report, 1864, p. 5. **1863.** "*R. peltatus?* var. γ *pseudofluitans* . . . may be a distinct subspecies, as the Rev. W. W. Newbould inclines to think."—Syme E. B. i. 20 (1863).

**R. trichophyllus** Chaix in Vill. Fl. Dauph. i. 335 (1786). **1855.** "Plentiful in Cambs., Norfolk, and Suffolk."—Bab. in Ann. N. H. ser. 2, xvi. 390.

**R. Drouetii** Schultz ex Godron, Fl. de Fr. i. 24 (1848). **1855.** In Cambs., &c.—Bab. in Ann. N. H. ser. 2, xvi. 393. "First found

and distinguished by the Rev. W. W. Newbould in 1846."—Bab. Fl. Cambs. p. 3.

**R. heterophyllus** (Weber in Wiggers Prim. Fl. Holsat. p. 42 (1780)?; Bab. in Ann. N. H. ser. 2, xvi. 393 (1855). **1855.** Cambridgeshire, &c.—*L. c.* [*R. aquatilis* Sm. E. B. 101 (1793) represents this species.]

**R. peltatus** Bab. in N. H. ser. 2, xvi. 398 (1855). **1855.** "First distinguished as a British species by F. J. A. Hort in Monmouthshire."—Bab. *l. c.*

**R. Baudotii** Godr. in Mem. de l'Acad. de Nancy (1839). **1855.** "Edinburgh; Shirehampton, near Bristol," &c.—Bab. in Ann. N. H. ser. 2, xvi. 395.

**R. tripartitus** DC. Ic. Pl. Gall. 15, t. 49 (1808). **1844.** "*R. innominatus*" of L. Cat. ed. i. edited by H. C. Watson, who found it in Surrey. "Near Claremont House, Surrey," and "near Haverfordwest."—Bab. in E. B. S. 2946 (1848).

**R. Lenormandi** F. Schultz in Flora, 726 (1837). **1843.** *R. hederaceus β. grandiflorus* (Bab. Man. ed. i. p. 5), identified as *R. Lenormandi* in Ann. N. H. ser. i. xvi. 141 (1845). "Near Coniston Water."—James Backhouse, Phyt. ii. 467 (1846).

**R. hederaceus** L. Sp. Pl. 556 (1753). **1632.** Johns. Kent, p. 29.

**R. sceleratus** L. Sp. Pl. 551 (1753). **1538.** Turn. Libellus.

**R. ophioglossifolius** Vill. Fl. Dauph. iii. 731 (1789). **1883.** "Found in 1878 near Hythe, S. Hants, by Mr. Henry Groves."—Journ. Bot. 1883, p. 51.

**R. Flammula** L. Sp. Pl. 548 (1753). **1548.** "Groweth in moyste places."—Turn. Names, H. iij.

**R. reptans** L. Sp. Pl. 549 (1753). **1777.** "At the west end of Loch-Leven in Kinross-shire, Dr. Parsons."—Lightfoot, Fl. Scot. 289.

**R. Lingua** L. Sp. Pl. 549 (1753). **1632.** Johns. Kent, p. 31. Gerard may have known the plant: see Herb. p. 813.

**R. auricomus** L. Sp. Pl. 551 (1753). **1633.** "Growes in meadowes and about the sides of woods."—Johnson, Ger. em. 953. Fig. and desc. in Gerard (1597).

**R. acris** L. Sp. Pl. 554 (1753). **1597.** "It chanced that walking in the fielde next unto the Theater by London, in the company of a worshipfull marchant named master Nicholas Lete, I founde one of this kinde there with double flowers."—Ger. 804.

**R. repens** L. Sp. Pl. 554 (1753). **1597.** "In pastures and medowes almost everywhere."—Ger. 805.

**R. bulbosus** L. Sp. Pl. 554 (1753). **1538.** "Crowfote . . . Kyngcuppe aut a Golland."—Turn. Libellus. This probably also included *R. acris*.

**R. Sardous** Crantz, Stirp. Aust. fasc. ii. 84 (1763); *R. hirsutus* Curtis (1777). **1663.** In Cambs. ("in locis humidis & lutosis"). —R. C. C. App. i. 8.

**R. parviflorus** L. Syst. ed. x. 1087 (1758). **1634.** "R. parvus echinatus Ger. em. In locis humidis."—Johns. Merc. Bot. p. 63. In Cambs.—R. C. C. App. i. 8 (1663).

**R. arvensis** L. Sp. Pl. 555 (1753). **1597.** "Groweth commonly in fallow fieldes, where corne hath beene lately sowen."—Ger. 805.

**R. Ficaria** L. Sp. Pl. 550 (1753). **1548.** "Groweth under the shaddowes of ashe trees."—Turn. Names, D v.

**Caltha palustris** L. Sp. Pl. 558 (1753). **1548.** "Groweth in watery middowes with a leafe like a water Rose." — Turn. Names, C ij.

**C. radicans** T. F. Forster in Linn. Trans. viii. 324, t. 17 (1807). **1807.** "In Scotia, J. Dickson."—Linn. Trans. *l. c.* "I found this about the year 1790 in a ditch that runs from the farm-house called Haltoun on the estate of Charles Gray, Esq., of Carse."—G. Don in 'Headrick's Agriculture of Forfarshire,' Appendix, p. 25.

(To be continued.)

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## *SHORT NOTES.*

Carex paniculata in W. Kent.—In May last I found *Carex paniculata* growing plentifully about Furnace and Scarlett's Mill Pond, near Cowden, W. Kent. This species, the Rev. E. S. Marshall informs me, has not been noted before for the vice-county.—Ernest S. Salmon.

New Records for N. Lancashire. — The following plants, new to N. Lancashire, have been found by me:—*Raphanus maritimus.* Furness shore, near Rampside. — *Symphytum tuberosum.* Side of Coniston Lake.—*Salix triandra.* In hedge, road-side near Humphrey Head.—*Schœnus nigricans.* Shore-bank E. of Treadley Point. I have to thank Mr. Baker for naming the *Salix.* Of the first and fourth he has seen specimens.—Lister Petty.

Rubus argentatus P. J. Mueller. — Last September I found, near Shanklin, a bramble which Dr. Focke names as above. He tells me that *R. Winteri* is a synonym.—Edward S. Marshall.

Agaricus giganteus and A. maximus (see Journ. Bot. 1891, p. 380). — It is perhaps hardly necessary to point out that Dr. Cooke, in *Grevillea* for December last, has based a part of his defence on a printer's error—"*A. Paxillus*," instead of "a *Paxillus*"—in the proof which somehow came into his hands. The error was of course corrected before publication in this Journal. For the rest it is enough to say that, if I am wrong, Dr. Cooke can correct me in two and a half lines, instead of confusing the issue in two and a half pages.—George Murray.

The Mosses of Co. Donegal.—Mr. H. N. Dixon states (*Journ. Bot.* 1891, 360) that he could find no records for Donegal, except some half-dozen in Moore's *Synopsis.* If he will turn to this Journal for 1886, p. 361, he will find a number of records by the present writer, several of them differing from his own. If Mr. S. A. Stewart had consulted this paper before publishing his *Flora of the*

*North-east of Ireland*, he would have also found some useful information. There is little use in taking the pains to publish information if future writers ignore the labours of their predecessors.—H. C. Hart.

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## *NOTICES OF BOOKS.*

*Fossil Botany, being an Introduction to Palæophytology from the standpoint of the Botanist.* By H. Graf zu Solms Laubach. Translated by H. E. F. Garnsey, M.A. Revised by I. B. Balfour, F.R.S., Queen's Botanist in Scotland, &c. Oxford: Clarendon Press. 1891. Pp. xii, 401, 49 cuts. Price 18s.

The Clarendon Press have laid botanists under further obligations by the publication of another of their important translations of standard German works on Botany.

Count Solms Laubach, one of the most distinguished students of the late Prof. de Bary, has succeeded him in the chair of Botany in the University of Strasburg. In addition to his numerous researches into various departments of recent botany, it is well known that he has paid considerable attention to the vegetation of past epochs of the earth's history. Great Britain has been, to so large an extent, the field in which fossil botany has been cultivated, and its strata have supplied so large a proportion of the data on which our knowledge of extinct plants has been founded, that Count Solms has visited most of our plant-yielding localities, and acquired for himself a knowledge of the fossils, and of the conditions under which they occur. Only last year he made a long journey to the north of Scotland for the purpose of inspecting the oolitic plant-beds of Cromarty, which abound in the remains of interesting *Cycadeæ*, known to us chiefly from the illustrations in Hugh Miller's *Testimony of the Rocks*. The results of his studies in this country and on the Continent he brought together in a series of University lectures delivered at Göttingen some years ago. And these lectures, somewhat remodelled, were published by him in 1887 under the title of an *Introduction to Palæophytology*. He employed the word Palæophytology in a restricted sense, as he explains in his preface:—"It should mean," he says, "the knowledge of the old types of vegetable forms as distinguished from the Angiosperms which made their appearance in later times, and introduced the modern era." This limitation—not very apparent in the German original—is lost in the title *Fossil Botany*, adopted for the translation. Angiosperms are excluded from the translation as they are from the original work.

An interesting introductory chapter is given dealing with the conditions under which the remains of plants have been preserved in the rocks. The cellular plants are necessarily disposed of in a few pages, the Algæ being the group that requires and receives most

attention. The controversy between Saporta and Nathorst as to the value of the surface markings which have been described as Algæ is clearly stated, and the views of the Swedish botanist are generally accepted. The author considers *Nematophycus* an Alga of doubtful position; he summarily dismisses the notion that *Pachytheca* could be its fruit—indeed, he doubts the vegetable nature of these small spherical bodies.

Gymnosperms—somewhat out of their order—are next dealt with. The structure of the *Cycadeæ*, especially of the abnormal forms, are investigated, and the remarkable group of *Cordaites* is expounded at length, Renault's work being fully stated, while suggestive criticisms are given of the obscure or anomalous plants referred to this group.

The greater part of the volume is devoted to Vascular Cryptogams, and especially to the arborescent *Lycopodiaceæ* and *Equisetaceæ* of the Carboniferous period. The importance of our English fossils, and the extent and value of our English collections, are obvious in perusing this portion of the volume.

It is a matter of regret that more care was not exercised in the translation. We have already taken exception to the title-page; it bears the date of 1891, yet describes the author as Professor in the University of Göttingen. And this disregard of dates is apparent elsewhere in the volume, as on page 97, where we read, "the sketch here given of *Bennettites*, which I hope to make more complete at some future time." This was true in 1887, but not in 1891, seeing that before the end of 1890 the promised sketch was published in the *Botanische Zeitung*, occupying 34 columns, with illustrations filling two double quarto plates. Through a very trifling omission on the same page Count Solms is credited with performing lapidary work for the British Museum! And the selection of "cone" as the equivalent of "kolben," which we notice on the page still open before us, neither conveys a correct rendering of the German word nor suggests a true idea of the fleshy structure in which the fruits of *Bennettites* are buried.

Though such oversights disfigure some of the pages of the translation, the work is a great boon to English palæontologists. It is a clear and concise review of our present knowledge of the great sections of the vegetable kingdom with which it deals. If for nothing else, it is an immense gain to students that they have got here the various terms of different authors replaced by a uniform terminology.

WILLIAM CARRUTHERS.

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*The Evolution of Plant Life: Lower Forms.* By G. MASSEE. London: Methuen & Co. 1891. Pp. viii. 242, 38 figs. Price 2s. 6d.

THIS book is one of a University Extension Series, and has been written by a lecturer of experience in University Extension work. It is hardly possible to imagine a task of greater difficulty than to write a book on the evolution of the lower forms of plant life. The material at an author's hand for such a book resembles that for our

old friend's chapter on the snakes of Iceland. A writer on this subject is of necessity driven (one would think) to search the record of the rocks, and to recognise the beggarly array of empty strata so far as cryptogams, other than vascular, are concerned. Mr. Massee states this candidly and correctly in paragraphs at the conclusion of chapters and elsewhere on fossil forms--they are a scattered remnant, and yield no conclusive data. But there is another way: to survey the present forms with critical eye, and to project oneself into the past and to plant anew the barren strata with vegetation which *must have* lived in the piping times when Nature had its own way. This may or may not be profitable, and Mr. Massee may or may not be right in his views--who shall say? These are indeed perilous times for peaceful botanists, when a young lady discusses in another place "the ancestors of the *Fucaceæ*," as if we knew, or even she knew, many precious things about the present ones. The disappointing thing about the game is that it is played without any rules, like the game of riddles invented by the Hatter and the March Hare which so exasperated Alice. However, Mr. Massee generally keeps to the present forms, and describes typical examples of them very well, and after all that is the main thing. No doubt they had ancestors, like the rest of us. As an introduction, there is a preliminary account of plant life; and the whole book, which is wonderfully cheap, forms an elementary treatise on the subject which will be of benefit to the numerous students attending Extension lectures who have no access to more expensive works.

G. M.

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*Norsk Flora af O. A. Hoffstad.* F. Beyer. Bergen and Kristiana. 1891. 8vo, pp. xxxii, 222.

To treat of the Flora of Norway in 254 pages seems somewhat startling, but this has been done in the volume before us, which is moreover printed in clear and distinct type, and embraces the greater part of the Norwegian Flora.

The book is arranged by Warming's Handbook, but the author gives a table of the Linnean system at the beginning and one of a natural system at the end of the book. By leaving out most of the critical species, hybrids, author's names, &c., he compresses the descriptions into a small space, giving, however, where there are more than three species in a genus, an arrangement even more easy to work by than that given by Bentham in his *Handbook*, which it somewhat resembles. In some cases, however, it would lead astray, as in *Potamogeton natans* and *P. polygonifolius*, where the difference of "long" and "short" has no specific value.

After the Flora proper (consisting of 191 pages) comes the explanation of the terms used in the book, with 31 woodcuts of leaf-forms, the meanings of the Latin names of the species, a list of sub-species, hybrids, &c., with the species under which the authors would place them, and index of Latin and Norwegian names. It may be doubted whether some of the latter are names actually in use among the natives; many do not agree with those given in

Blytt's *Norges Flora*. A good many bear a close resemblance to Icelandic names, as might be expected from the former occupation of that land by the Norwegians.

In "critical" genera, only the well-known species are named; for example, *Hieracium* has 14 species against 59 given by Blytt; *Carex* 82, against 100; and so on. To the tourist who understands Norwegian, or for beginners in botany, the book is a most useful and compact guide, and forms an excellent introduction to Blytt's larger work.

A. B.

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*The Plant World*. By GEORGE MASSEE. Whittaker & Co., London. 1891. Pp. x. 212, 56 figs. Price 3s. 6d.

MR. MASSEE has attempted to give in the narrow compass of this little book a general account of the "past, present and future" of the Plant World. The past history is culled from the fossil remains, the present from what we see around us at this date, and "the future"—perhaps this is a delicate way of telling us that the author writes for posterity. The book is certainly ahead of the present day, especially in its treatment of the past. The sentences are in great part of phenomenal length,—out of all proportion to the size of the book, if we may so measure them,—and this takes away from the brightness which should be the most prominent character of a book of this kind. Mr. Massee has done so much better elsewhere, nowhere more so than in the pages of this Journal, and might have done so much better in this instance, that we regret to be unable to commend his little book more heartily.

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## *ARTICLES IN JOURNALS.*

*Annals of Botany* (dated Nov.; issued Dec. 23). — R. E. Fry, 'Aggregations of Proteid in cells of *Euphorbia splendens*' (1 plate). H. Solms-Laubach, 'Fructification of *Bennettites*' (2 plates).—J. G. Baker, 'Summary of New Ferns' (concld.).—W. B. Hemsley, 'New Solomon Islands Plants' (*Canarium sapidum*, *Linociera sessiliflora*, *Anodendron oblongifolium*, *Hoya Cominsii*, *Dischidia Milnei*, *Myristica faroensis*, *Grammatophyllum Cominsii* Rolfe, *Dendrobium tigrinum* Rolfe, *Cominsia* (n. gen. *Marantearum*) *Guppyi* (1 plate) ).—G. Massee, '*Hobsonia* Berk. MS.' (n. gen. *Tubercularieæ*). — Id., *Cordyceps Sherringii*, sp. n.—H. Wager, 'Occurrence of Diastase in Pollen.' — D. H. Scott, 'Origin of Polystely in Dicotyledons.'—E. M. Holmes & E. A. L. Batters, 'Appendix to Revised List of British Marine Algæ.'

*Bot. Centralblatt*. (Nos. 47–51).—K. Treiber, 'Ueber den anatomischen Bau des Stammes der Asclepiadeen' (2 plates).—(No. 50). P. Kunth, 'Weitere Beobachtungun über die Anlockungsmittel der Blüten von *Sicyos angulata* & *Bryonia dioica*.'

*Bot. Gazette* (Nov. 16). — E. J. Hill, 'Sling-fruit of *Cryptotænia canadensis*.'—B. D. Halsted, 'Bacteria of the Melons.'—S. Watson, *Pentstemon Haydeni*, sp. n. — G. F. Atkinson, *Ravenelia cassiæcola*, sp. n.—T. H. Kearney, 'Cleistogamy in *Polygonum acre*.'

*Bot. Notiser* (1891, häft. 6). — R. Sernander, 'Studier öfver skottbyggnaden hos *Linnæa borealis*.' — K. Starbäck, 'Några ordi prioritetefrågan.'—E. Nyman, 'Bidrag till Södra Norges mossflora.' —G. Andersson, 'Om *Najas marinas* tidigare utbredning under kvartärtiden.'

*Bot. Zeitung* (Nov. 20). — M. W. Beyerinck, 'Die Lebensgeschichte einer Pigment-bacterie.' — (Nov. 27–Dec. 11). G. Klebs, 'Ueber die Bildung der Fortpflanzungszellen bei *Hydrodictyon utriculatum*' (1 plate).

*Bull. Torrey Bot. Club* (Nov.). — W. L. Jepson, 'Botany of the Marysville Buttes.'—N. L. Britton, 'The Citing of ancient botanical authors.'—Id., Rusby's S. American Plants.—F. S. Collins, 'New England Marine Algæ.'—(Dec.). T. Morong, 'N. American *Eriocauleæ*.' — N. L. Britton, 'New or noteworthy N. American Phanerogams' (*Rubus Millspaughi*, *Mamillaria Notesteinii*, spp. nn.). —F. D. Chester, 'New or noteworthy Diseases of Plants.'

*Gardeners' Chronicle* (Nov. 28).—*Dendrobium Leeanum* O'Brien, sp. n.—(Dec. 5). *Epidendrum pusillum* Rolfe, *Appendicula Peyeriana* Rolfe, spp. nn. — (Dec. 12). *Mormodes punctatum* Rolfe, sp. n.— (Dec. 19). 'Clubbing in Wallflower' (fig. 106).

*Journal de Botanique* (Dec. 1).—E. Bornet, *Ostracoblabe implexa*. L. Mangin, 'Étude historique et critique sur la présence des composés pectiques dans les tissus des végétaux.' — —. Gasilien, 'Lichens rares ou nouveaux de la Flore d'Auvergne.'

*Notarisia* (Oct. 31). — F. Schütt, 'Sulla formazione scheletrica intracellulare di un Dinoflagellato' (*Gymnaster*, gen. nov.: 1 plate).

*Oesterr. Bot. Zeitschrift* (Dec.).—J. Velenovsky, 'Nachtrage zur Flora Bulgarica.'—K. Rechinger, 'Beiträge zur Gattung *Rumex*.'— J. Freyn, 'Plantæ novæ orientales' (*Trifolium Sintenisii*, *Astragalus saxatilis*, *A. leucothrix*, *A. Sintenisii*, *A. sericans*, spp. nn.). — E. v. Halácsy, *Valeriana Pancicii*, sp. n. — H. Sabransky, 'Weitere Beiträge zur Brombeerenflora der Kleinen Karpathen.'

*Trans. Linn. Soc. London* (Bot. iii. pt. 5: Oct.).—E. G. Barton, 'Systematic and Structural Account of *Turbinaria*' (1 plate).

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## *BOOK-NOTES, NEWS, &c.*

As already announced in this Journal, the Revs. E. F. and W. R. Linton, R. P. Murray, and W. Moyle Rogers propose issuing a limited number of sets of British Brambles. Each set will consist of four fascicles, the first of which will be ready in February. The British List of Rubi may be said to consist of about 100 "species."

The compilers hope to include in the set nearly all the rare and local plants, as fully authenticated as possible. As, consequently, much time must be consumed and expense incurred in getting the material together, the several fascicles will be issued at intervals of about a year: a plan which, it is hoped, will also prove convenient to the subscribers. Each fascicle will contain twenty-five full sheets, representing as many different brambles. A few well-marked varieties will be introduced, but no hybrids. The price of each fascicle will be one guinea.

Mr. Britten has undertaken the editorship of *Nature Notes* for the Selborne Society. The January number will contain a popular introduction to the study of the Mycetozoa, by Mr. Arthur Lister.

The Presidential Address delivered last July by Mr. F. M. Bailey before the Royal Society of Queensland, and published in its *Proceedings*, is devoted to a "Concise History of Australian Botany," beginning with "the celebrated buccaneer Capt. William Dampier" (1688–9), to whose many titles is now added that of "father of Australian botany," and carried down to the present time, so far as Queensland is concerned.

The *Journal of the Institute of Jamaica*, the first number of which appeared in November, is to be a quarterly record of the Transactions of the Institute, and will contain articles dealing with the flora and fauna of the island.

A paper on the Structure of *Tmesipteris*, with five plates, is contributed to the *Proceedings of the Royal Irish Academy* (3rd Series, ii. No. 1) by Mr. A. Vaughan Jennings and Miss Kate M. Hall.

The *Scottish Naturalist* is to be incorporated with the *Annals of Scottish Natural History*, a new quarterly magazine devoted to the publication of original matter relating to the natural history of Scotland, of which Prof. J. W. H. Trail is to be editor.

Mr. Ridley's Expedition to Pahang.—The *Straits Times* of Nov. 13, 1891, contains an account of Mr. Ridley's expedition to Pahang, to explore, if possible, the Gunong Tahang range of hills. The expedition started on the 23rd of June, and returned to Singapore on the 5th of September. Owing to the failure of the commissariat, it was impossible to reach the mountain Tahan; the difficulty of making way through the jungles, the shallowness of the rivers, and the worthlessness of the coolies also hindered the progress of the expedition. Notwithstanding these drawbacks, the botanical results of the expedition were far from unsatisfactory:—"Although two out of the three plant-collectors were ill—one with fever, the other from an injury to his foot—for the greater part of the time in the Tahan River valley, and were, therefore, useless, the collection of herbarium specimens was very successful, over two thousand being obtained. The most striking plants obtained were *Brugmansia Lowi* (one of the *Rafflesiaceæ*), hitherto only known from Sumatra and Borneo, and being the first species of the order *Rafflesiaceæ* obtained in the Peninsula. *Protamomum*, a new genus

of *Scitamineæ*, an exceedingly remarkable plant, was obtained at Pulau Tawar. Though evidently closely allied to *Zingiberaceæ*, it differs from all known species in possessing five stameus, instead of one only. Its anatomy will probably throw much light on the structure and position of the whole group, and it has the merit also of being a showy plant well worthy of cultivation. Many other new species of various orders were also obtained, and many plants not hitherto known from the Malay Peninsula. A very large number of living plants, interesting to botanists, ornamental or useful, were brought down, and though a number succumbed to the difficulties of transport, about five hundred live plants and cuttings seem to be thriving. Some very beautiful *Didymocarpi* were obtained, with white, crimson, and white and violet flowers, which have already commenced to flower in the Botanic Gardens. Over a hundred kinds of seeds were also collected. The whole collection, together with the plants obtained by Mr. Ridley last year in the neighbourhood of Pekan, will, when worked out, give a very fair idea of the peculiarities of the flora of the Eastern Coast, which has hitherto never been visited by any botanist."

The paper of most importance in the handsome volume devoted to the *Second Annual Report of the Missouri Botanic Garden* (1891) is Prof. Trelease's Revision of North American *Epilobia*, which was noticed at p. 308 of our last volume. Mr. Shaw, the founder of the garden, provided, among other things, for an "annual banquet to gardeners, florists and nurserymen," some sixty of whom duly assembled; and a full report of the proceedings on the occasion is given. The Hon. Isidor Bush made the last speech of the evening, in the course of which he said that the "one thing which Mr. Shaw most cherished was botany." Now this is exactly the reverse of the case, as we remarked last June; but it is only right to remember that Mr. Bush's speech was made "at a very late hour" and at the close of a festive evening. Mr. Bush proceeded as follows:—"I believe that very few men, not excepting the gentlemen present, know who was the first botanist and what was his method of classification. Allow me to tell you that it was a man whom all the world knows, and it is written in a book which the whole world knows. It is in the first chapter of the book of Moses called the Bible (!) And I will tell you how it reads and you can convince yourself, no matter in what translation, and you will see that on the third day the plants were created and that he classified them in only two kinds: plants bearing seed directly, each of its kind,—I know it better in Hebrew than in English,—and plants bearing fruit wherein the seed is contained, each of its kind; and that was the classification of over four thousand years ago by that old teacher, or law-giver as they called him, Moses. And every one who will look in the Bible will find expressly this classification. It is very simple. It may not be complete, but it is a botanical classification." After this Prof. Trelease called attention to "the lateness of the hour," and the meeting dispersed.

F. Morgan del et lith

West Newman imp

R. Morgan del. et lith.

West, Newman imp.

# NOTES ON PONDWEEDS.

By Alfred Fryer.

(Plates 317 & 318.)

Potamogeton gramineus L. v. graminifolius Fries = P. heterophyllus var. — Rootstock with many strong far-creeping stolons. Stem stout, terete, flexuous, ascending, dichotomously branched from the base, sometimes with secondary branchlets. Stems with wholly submerged foliage, slender, and more crowded together; internodes elongated, but shorter than their subtending leaves. Lower leaves all similar, flat, sessile, ascending, alternate, thin, somewhat opaque, shining; strap-shaped, or elongate-lanceolate, attenuated towards each end, especially towards the acute acuminate apex, often falcate; lowest rarely reduced to a centrally-expanded bodkin-pointed midrib. Floating coriaceous leaves alternate, stalked, oval-elliptical or oblong; lamina gradually or suddenly contracted into the petiole, which it usually exceeds in length; rarely produced in a depauperated state at the base of the peduncles, and then opposite, essentially belonging to barren states of the plant. Stipules persistent, herbaceous, small, narrow, becoming involute and then appearing acute, larger and broader on autumnal barren stems, cymbiform beneath the peduncles. Flower-spikes dense, cylindrical, 1–1¼ in. long, few, usually produced singly, terminal. Drupelets small, compressed, green, shining; dorsal margin semicircular, acutely keeled; lateral ridges less conspicuous; inner margin slightly convex; beak short, subcentral. Whole plant bright green, sometimes shaded with brown tinged with yellow; drying darker.

The above description is made from the typical form only; this branches out into so many *states*, some of which look so like distinct species from the type, that it would be impossible to describe them all under one specific character. The typical form is figured in Plate 317, and one of the most divergent forms in Plate 318; these plates will give a fair idea of the extremely different facies assumed by some of these forms. I am unable to call them true *varieties* because, after having carefully watched them for four years at all seasons, and under varying conditions, they all revert more or less closely to the type, on shoots produced from the same root-stocks!

*P. graminifolius* grows abundantly in Pidley Fen, Huntingdonshire, over an area of about two square miles. As a native of our islands, it seems hitherto to have escaped the notice of British botanists, although it probably grows in other English localities, and certainly ought to occur in the more northern counties of Scotland. However this may be, with one or two exceptions afterwards referred to, I have not met with any specimens in collections of British plants, hitherto examined, which can be assigned to this form; nor does it seem to be included in specific descriptions of *P. heterophyllus* by British authors.

Although in its untypical forms this *Potamogeton* had been known to me for about four years, until quite recently I was unable to refer it to any named segregate of *P. heterophyllus*, nor to obtain any definite suggestions as to its true specific rank from any of the specialists to whom it was submitted. This difficulty no doubt arose from the very untypical states the plant usually assumes in the Huntingdonshire locality, and was only removed by the development, in a single station, in the autumn of 1891, of a form thoroughly characteristic of Fries' variety *graminifolius*. Fortunately I had been able to watch the very numerous forms assumed by the plant throughout the fen, in preceding years, and to gather complete series of each, illustrative both of inherent variations and those consequent on frequently-changing external conditions. So I had already been able to conjecture that these very different-looking forms were in all probability *states*, rather than true, persistent varieties, of one species; a supposition amply confirmed by the evidence furnished by the newly-discovered typical form. This grew in a single patch spreading from one rootstock, and in a station which favoured the development of many states simultaneously. By patiently tracing out the stolons, they were seen to ascend from deep to shallow water, and some even creeping a little way up the bank became almost land-forms. By specimens gathered from this single rootstock I was at once able to connect the two extreme forms figured in Plate 317 as mere *states* of one variable species.

In the absence of special descriptions of the various forms assumed by the Pidley Fen *graminifolius*, its relationship to other Fenland species will be most readily shown by detailing the steps I took to ascertain its specific name, and, that being found, to see whether any other Fenland Potamogetons could be ranged with it.

In the first place, my attention was drawn to the typical form above described (Plate 317) by a conspicuous autumnal stem (growing in a station in which the plants had been observed for four years), which, as it grew, looked so like the Irish "*P. lonchitis*" that for a moment I felt sure it was that species. Although a closer examination of the whole plant clearly showed that it was only a large state of the *heterophyllus*-like species I had been watching for years, I naturally compared my find with a set of "*P. lonchitis*" from the Boyne. For want of any knowledge of the completely submerged and younger states of the Irish plant, the comparison was by no means complete, nor altogether satisfactory to myself; as far, however, as it could be made, I was unable to find, either in the fruit, general habit of the flowering stems, or in the shape and structure of the leaves, any specific difference between the two plants. But on further comparing both sets of specimens with North American typical *P. lonchitis* collected by Dr. Morong, neither of them seemed to belong even to the same natural section of the genus as the American plant.

Further than this, since the commencement of this note, I have been able to compare all these plants with a beautiful series of specimens received from Mr. Reginald Scully, labelled, "*P. Zizii*, form, River Laune, Killorglin, Kerry"; with these both my plant

and that from the River Boyne closely agree. Allowing for the evidently different local conditions under which the plants have grown, confirmed "splitter" as I am, I can find no single character by which the three plants may be separated. Hence I consider the Irish "*P. lonchitis*" to be also a state of the species above described as *P. gramineus* L. v. *graminifolius* Fries.

This name was arrived at by the examination of a fine series of Scandinavian forms of *P. heterophyllus* named and arranged by Dr. Tiselius; on looking them over I found several varietal names added to the general specific one of *gramineus* L. (used by many continental botanists as being prior to *heterophyllus* Schreb.), and amongst them was that of *graminifolius* Fries; then, selecting specimens apparently belonging to this form, without further reference to Dr. Tiselius' labels, I found a very natural group of forms all of which bore a strong resemblance to the newly observed type-plant of Pidley Fen, and all of which, on reference then being made to the labels, bore the varietal name, "*graminifolius*"! To these the specific likeness to my plant was seen to be almost complete, and I had no hesitation in ranging my plants under the same varietal name. It will probably be understood why I use it in this paper, which is written not so much to describe a form which seems little known, or unknown, as a British plant, as to show, in the first place, how extremely wide a *state* of a *Potamogeton* may depart from its typical form, and yet suddenly revert to it under slightly altered conditions of growth; and also to serve as a sort of "object-lesson" to illustrate the method I would recommend students to adopt in naming local forms they may happen to find. Probably they will make many mistakes, as probably I have done in the case here related; but they will, by the process recommended, obtain more real knowledge of the genus than they possibly could by sending a fragment of a plant to be compared with another fragment, about the real specific value of which the original namer likely enough knew little or nothing. In well-defined species no method of naming a plant can be safer than matching with a well-authenticated typical specimen; but it is quite otherwise with *any* form belonging to a "critical" group in this genus.

*P. gramineus* L. seems to divide itself into two natural sections, *graminifolius* Fries and *heterophyllus* Schreb., between which a comparison shows the following differences:—The fruit in v. *heterophyllus* seems to be larger, less rounded on the dorsal margin, and less prominently keeled, and the habit of growth is less like that of *P. Zizii* than in v. *graminifolius*.

But thus far I have only got to a fitting place and name for my new form; the next question was,—What relation did it bear to certain segregates I had proposed and named in the pages of this Journal? This, I must confess, I approached with some feelings of dismay. For I had, during the four years of watching and collecting the Pidley Fen plant, noticed several states (as I now know them to be) which respectively resembled, more or less, all the other *heterophyllus*-forms of the fens, and I had suggested, or had suggested to me, for them such names as *falcatus*, *varians*, *fluctuans*,

*Zizii* × *heterophyllus*, &c.; and, further, the recently discovered "type-plant" itself bore a very remarkable resemblance to *P. falcatus*. The results of these further comparisons are as follows:—

*Graminifolius* differs from *varians* by the absence of the spathulate, coriaceous, submerged autumnal leaves, and of the membranous *Zizii*-like summer foliage; the early state, too, is very different. These early states of Potamogetons are valuable as affording indications of the species new forms have probably descended from, and whether such forms are the result of variation or hybridization.

From *P. falcatus*, the species to which *P. graminifolius* is most nearly allied, the distinction was equally well marked. In *graminifolius* the lower leaves are sessile, instead of semiamplexicaul; the fruit is much larger and less freely produced, the flower-spikes single, instead of in clusters, and with nearly equal, instead of swollen, peduncles. Again, the early spring states widely removed the two forms, and under no state can *P. graminifolius* be mistaken for *P. nitens!* On the other hand, how like *falcatus* and *nitens* are to one another will be best shown by the following quotations from a letter recently received from Dr. Tiselius, whose knowledge of *nitens*-forms both in the field and in the herbarium is unequalled:—"The principal reason (although, as you yourself remark, not a completely convincing one) for your distinguishing your *falcatus* from *nitens* seems to me to be precisely the fully and generally developed fruits on some of the specimens you sent me. But why should not these specimens be specimens of *nitens* with fruit?"

Enough has now been said to show how distinct *P. graminifolius* is from the other forms which grow under apparently similar conditions in the neighbouring fens. But the question will be naturally asked,—Why has this form, resembling in its numerous states so many closely allied "varieties" or "species," not developed in some instances at least into one or other of them, in a locality so well adapted for the production of new quasi-specific forms? and, above all, why has it not crossed with *P. Zizii*, and so produced some of the hybrid forms said to be so common in the fens? It certainly has crossed with *Zizii!* For the explanation of the rest, which does not seem to present any great difficulty, I hope to write a second note on *P. falcatus*. Here it is enough to say I can see no traces of hybridity in *P. graminifolius*.

The form this note has assumed has been entirely suggested by letters I have recently received accompanying parcels of Potamogetons for me to name, and by the remarks I find already written on the sheets of specimens by others. Those who have made a special study of the genus are too glad to have the opportunity of comparing specimens collected by others with their own probably more extensive collections, and in unusually difficult cases to consult the great public herbaria in their researches after a name; but I repeat that this is often little more than a bare name, and too frequently is merely the further propagation of an old error. Let students, then, take what they can get from specialists, but let them test and sift the information so obtained *thoroughly in the field*. Often it will be found that serious mistakes have been made by writers of preceding

generations, implicitly accepted, and handed down uncorrected till now. No blame can attach to anyone in these cases, except to the student, who at length having the opportunity of studying the living plants, neglects to avail himself of it.

As there is a limit to the patience of even the most indulgent editor, I have compressed the details of my treatment of *P. graminifolius* into a quarter of the space they originally filled. Hence I have often given *results* only, instead of the processes which led to these results. But I hope enough has been said to show that the only clue to a "critical" local form is to be found in the field.

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EXPLANATION OF PLATES.

PLATE 317.—Typical form. Fig. 1, part of shoot resembling Irish "*lonchitis*"; 2, lower submerged leaves; 3, coriaceous floating leaves of shallow water state; 4, fruiting spike; *all from one rootstock.*

PLATE 318.—Extremely divergent form. Fig. 1, flowering state; 2, shallow water state with coriaceous leaves; 3, submerged stem; 4, fruiting spike; *all from one rootstock.*

NOTE.—*All forms* throughout Pidley Fen have a tendency to produce the typical submerged leaves represented in Plate 317, fig. 2.

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# DRAWINGS OF BASIDIOMYCETES AT THE BRITISH MUSEUM.

BY WORTHINGTON G. SMITH, F.L.S.

IN the early spring of 1891, the Trustees of the British Museum, on the recommendation of the Keeper of the Department of Botany, commissioned me to make a series of water-colour drawings of the whole of the British Basidiomycetes for the Public Gallery—the Hymenomycetes and Gasteromycetes of Fries. In the new edition of Berkeley's *Outlines*, recently compiled by me, more than two thousand British species of Basidiomycetes are given, and these I was commissioned to paint upon ninety-six sheets of double elephant drawing-paper.

I at first thought that, owing to insufficiency of material, no such series could possibly be prepared, but on looking through the large collection of drawings preserved in the British Museum, including all those which have been made by myself during the last thirty years, and the large series made by the late Mrs. Russell, together with the invaluable original drawings of fungi made by the late Mr. James Sowerby, I found the task might be undertaken with some prospect of success. This prospect was aided by the kindness of various friends, who, upon application, lent a large number of additional original drawings of British Fungi. Mrs. Lloyd Wynne, of Coed Coch, sent the whole of her sketches of white-spored Agarics, mostly drawn at Coed Coch, and named by the late Mr. Berkeley; with the promise of other drawings as required. Mr. William Phillips forwarded his entire collection of original water-colour drawings of the British Hymenomycetes. Mr. George Massee and Dr. Plowright lent all their drawings, and a

small collection was obligingly sent by Mr. Thomas Howse. Aid was also promised by the Rev. Dr. Stevenson, of Glamis, the Rev. Dr. Keith, of Forres, Dr. Cooke, and others.

I found myself, therefore, fairly well equipped with original drawings, as well as illustrated books, prints, and dried specimens. There are two series of dried fungi in the British Museum, one known as the general collection, and the other as the British; in both collections a vast number of excellent examples bequeathed by the late Mr. C. E. Broome are now incorporated, and many of these specimens are made more valuable by notes and sketches by the donor.

I have now completed drawings of the whole of the British *Leucospori*, and forty-four of the *Hyporhodii*, or four hundred and ninety-two species. In making these drawings, I have in every instance referred to every available drawing, print, or dried example; I have also used my thirty years' experience to produce (what I consider to be) drawings of characteristic examples. Ill-grown, dwarfed, hypertrophied, and washed-out specimens have been passed over in the attempt to give type forms and colours. Of course longitudinal sections are in every case given, but at the present time there is no sufficient undoubted natural material for all the spores.

One great advantage has arisen for future students in thus grouping the fungi on large sheets, as critical and closely allied species are now illustrated side by side, and the salient points of differentiation can be seen at a glance, *i. e.*, where such points exist. By their close resemblance to good species, doubtful and bad species can now also easily be detected or strongly suspected.

The drawings were no sooner commenced than critical and possibly new British species began to present themselves; it was, however, found impossible to wait for any doubtful material, so that several species now known to be British are not incorporated on the early sheets—as *Agaricus nymphærum* Kalch., and *A. coryphæus* Fr. Many most distinct forms have been passed over, owing to the impossibility of deciding upon a name or finding a record; these must all be looked to when the bulk of the work is complete. *Agaricus aridus*, *A. umbrinellus*, *A. pluteoides*, and other species new to Britain, have, however, been illustrated.

Sowerby's drawings are frequently annotated in pencil by the artist, and these notes appear never to have been printed; some of the drawings are in duplicate. Sowerby at times prepared a coloured as well as a black and white sketch of the same fungus, and he generally more or less manipulated his engravings to suit the size of his plates; he often, too, re-grouped his fungi on the plates, so that, to properly understand his illustrations, one must study his annotated original drawings. The difference between the plates and the drawings is sometimes astonishing; several of the latter have never yet been published.

Some of Sowerby's pencil notes are both curious and instructive; at times he tasted the specimens illustrated; as examples, he writes under *A. cervinus*, "Insipid earthy taste to the palate, but some-

what acrid in the throat"; under *A. subpalmatus* he says, "Taste very bitter at the tongue's end, did not try further."

Another fact has come out very strongly, *viz.*, that Fries depended a great deal on coloured plates for descriptions of the species with which he was poorly acquainted; he of course had no other material when real specimens were not forthcoming. I can clearly see that some of the Friesian descriptions have been drawn up from faded or discoloured plates, and that the colours given by Fries have sometimes never existed in nature.

Some published plates of fungi, both old and new, are extremely bad both in drawing and colour; some mycological "artists" do not seem to have possessed the most elementary knowledge of drawing, and the illustrations compare unfavourably even with the art works of palæolithic man. Sometimes a particularly bad plate seems to have inspired a specific name; for instance, I have in past times wondered why Fries called a certain fungus *Agaricus pessundatus*. Dr. H. T. Wharton, who has supplied meanings to Fries' specific names for Dr. Cooke, says, "The intended meaning is not clear." Now, if Dr. Wharton had only looked at the original plate from which Fries drew up his description, he would have seen an almost shapeless object which looks as if it had been danced upon by a clod-hopper—hence the appropriate name of *pessundatus*. *Pessundatus* is frequent with local yokels.

In the new series of drawings great attention has been paid to colour, and MS. notes have been taken, as the work has progressed, of the colour of every species. Some of the colours given by Fries are very indefinite—as the "colour of a sugar-cake" or of a "brick." One requires to know the exact tint of a Swedish brick or sugar-cake; both vary in this country considerably. So does the odour of soap, so frequently mentioned by Fries. What was the odour of Swedish soap fifty years ago?

Dr. Cooke's published *Illustrations of the Agaricini* have been very useful; many of these have been taken from Mr. Phillips', Mr. Massee's, or my own drawings, and, as I have had all the original material at hand, I have been able to compare all together. The following slips in this work, as regards some of my own drawings, may be noted. The large drawing of *Agaricus strobiliformis* with no artist's name is from my original; it was not found by me at King's Lynn, as stated on the plate, but at Micheldever, Hants. In the plate of *A. adnatus*, a young example, not my work, is added to the plate. In the letterpress accompanying *A. Georginæ* the fungus is said to be named in honour of my wife; but Georgina is not and never was my wife. In *A. resplendens* there is no lavender colour in my original. *A. acerbus* is not from a drawing of mine, but from a sketch by W. W. Saunders. In *A. nictitans* the deep red-brown spots on the gills as given by me are omitted. In *A. albellus* the two lower figures only are mine; the three upper ones are from some other source. *A. elixus* is very unlike my original in colour. *A. geotropus* var. *subinvolutus* is not from my original, but from an original by W. W. Saunders. *A. leucophyllus* is not like my original. *A. directus* (so called) is not the *A. directus* of B. & Br.; the original examples and a drawing by Mr. Broome

himself in the British Museum show *A. directus* to be totally distinct: "× 5" should be "× 4," and the material upon which my plant is growing is not a dead leaf, but part of the cone of an *Encephalartos*. *A. craspedius* is not from a drawing of mine, but from one by Mr. Saunders. *A. acerinus*, taken from my drawing, should be *A. spongiosus*, and the description on the plate, "On stump, Walthamstow," stands on my drawing, "In a rotten beech, Epping Forest, near Walthamstow." In *A. gadinioides* two of the figures are not mine. In *A. atro-cæruleus* one example appears to be springing from blue mycelium; in my original drawing this colour belongs to the blue pileus of an example beneath, omitted in *Illustrations*. In *A. Taylori* one example and two of the three sections are not mine. In *A. eximius* the smaller example is half as large again in my original, and the deep furrows shown in top of stem in the larger specimen do not exist in the original, with which the colour of the gills in copy does not agree. In *A. frumentaceus*, pink spores have been added to the plate from some other source than my drawing. The plate does not represent *A. frumentaceus*, and the spores of the fungus illustrated should be white, not pink. This instance shows how unwise it is to take the general aspect of a fungus from one source and the spores from another; as my name is put to Dr. Cooke's plate, I am of course there credited with the coloured instead of white spores. *A. Saundersii* is not from my original, but from a drawing by Mr. Saunders, hence the specific name given by Fries.

The above are but trifling slips, perhaps inseparable from so extensive a work as the *Illustrations*, but it is well they should be set right.

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# RUST AND MILDEW IN INDIA.

By the late A. Barclay, M.B., F.L.S.

(Concluded from p. 8.)

## Central Provinces.

1875. Humidity and rain on the whole deficient; no data for cloud. Conditions unfavourable to both host and parasite, but especially to the latter. Outturn rose.

1876. Conditions much the same. Outturn very slightly in excess of the previous year.

1877. Humidity, cloud and rain, all in excess. These conditions (not being extravagantly excessive) are favourable alike to general vegetation and to the growth of the parasite. The fall in outturn, and rise in prices, may in this case be attributed with considerable probability to the parasite; otherwise we should have expected a high outturn.

1878. Humidity on the whole excessive (except in March); cloud on the whole somewhat excessive; rain excessive (except in March). These conditions are favourable both to the host and to the parasite, but especially to the latter. As the outturn fell

greatly, it is difficult to avoid the conclusion that the parasite had much to say to it.

1879. Humidity on the whole deficient, especially in April; cloud normal in January, slightly in excess in February, and deficient in March and April (especially in the latter month); rain deficient in all months except May. Conditions decidedly unfavourable to the fungus, but also to the host, from excessive dryness. Outturn very small and prices high.

1880. Humidity, cloud, and rain deficient in all months. These conditions decidedly unfavourable to the parasite, and also to the host. A small rise in outturn.

1881. Humidity deficient in January, normal in February, and excessive in March and April; cloud on the whole excessive; rain deficient, except in March. Conditions on the whole as favourable to host as to fungus. Outturn rose, but only to the level of 1877, a year whose deficit we traced to the possible influence of rust.

1882. Humidity deficient; cloud on the whole deficient (especially in February); rain on the whole deficient (with the doubtful exception of April). Conditions unfavourable to host, and especially to parasite. The fall in outturn was therefore probably due to the direct influence of climate on the host.

1883. Humidity excessive in January, deficient in February, about normal in March, and very deficient in April; cloud on the whole excessive in the earlier three months, and deficient in April and May; rain deficient, except in March. Conditions fairly favourable to the host, and a normal humidity, with excessive cloud and normal rain in March, would be favourable to fungal development. Outturn fell slightly.

1884. Humidity about normal in January and February, very deficient in March, and generally deficient in April and May; cloud deficient in January and March, about normal in February, and excessive in April; rain about normal in January, but deficient in the remaining months. The deficiency in rain unfavourable to the parasite, but the conditions were on the whole favourable to the host. Outturn rose somewhat.

1885. Humidity excessive in January and February, normal in March, and deficient in April; cloud excessive in January, March and April, but deficient in February; rain generally excessive. Conditions very favourable to both host and parasite. Outturn rose, but slightly.

1886. Humidity excessive in January and and March, normal in February, and deficient in April; cloud the same; rain deficient in all months except May, when it was normal. The conditions, but for the deficiency in rain, would have been very favourable for the fungus and host; but the rain deficiency was unfavourable to both. Outturn fell considerably.

1887. Humidity excessive in January, but deficient thereafter; cloud much the same; rain excessive in January, and deficient thereafter. Conditions in January most favourable to the parasite, but the climate in the succeeding months was unfavourable to both host and parasite. Outturn continued to fall.

1888. Humidity excessive in January and February, but deficient in the remaining months; cloud was on the whole deficient; rain was excessive in January, but thereafter on the whole deficient. Conditions in January very favourable to the fungus, and generally they were favourable to the host. Outturn fell slightly.

## Punjab.

1875. No data for humidity and cloud; rain deficient throughout. Condition unfavourable to the fungus. Outturn rose.

1876. Humidity deficient, except in March; no data for cloud; rain on the whole about normal. Conditions favourable to host, and possibly also to the parasite. Outturn rose slightly.

1877. Humidity excessive; cloud excessive, especially in January and April; rain excessive (especially in February), except in March. Conditions apparently favourable to host, but especially to fungus. Outturn fell somewhat, and this may be attributed in great part to the parasite, as otherwise the outturn should have been greater than in the previous year.

1878. Humidity in January, February and April excessive, but very deficient in March; cloud excessive in February and April; rain excessive in February and April, but deficient in January, and especially March. Conditions appear to be very favourable to the host and to the fungus, especially in February. Outturn fell considerably.

1879. Humidity deficient in all months, especially in January and April; cloud normal in January, deficient in February, excessive in March, and deficient in April; rain deficient in all months, except March. Conditions fairly favourable to the host, but excessive cloud and rain in March decidedly favourable to the parasite. Outturn fell considerably.

1880. Humidity on the whole about normal for the first three months; cloud deficient, except in February, when it was excessive; rain deficient throughout, except in February, when it was normal. Conditions fairly favourable to the host, and excessive cloud with normal rain in February favourable to the fungus. Outturn only slightly better than in the previous year.

1881. Humidity deficient in January and February, and excessive in March and April; cloud much deficient in January, but excessive in February, March and April; rain deficient in January and February, excessive in March, and normal in April. Conditions very favourable to both host and parasite. Outturn only slghtly improved, equal to that of 1878.

1882. Humidity excessive in January and February, deficient thereafter; cloud excessive in January, deficient in February and March, and about normal in April; rain excessive in January, deficient in February and March, and somewhat excessive in April. Conditions not favourable to the fungus, especially the absence of cloud in February and March, and the same rainfall. Outturn rose slightly.

1883. Humidity on the whole above the average; cloud

excessive in January, but deficient or normal in the remaining months; rain excessive in January, deficient or normal in the three following months. Conditions favourable to the host, but not to the parasite. Outturn somewhat greater than in the previous year.

1884. Humidity excessive in the first three months, and deficient thereafter; cloud excessive in January, normal in February and March, and excessive in April; rain deficient throughout. The last condition was decidedly unfavourable to the fungus. Outturn rose to a high level.

1885. Humidity and cloud on the whole excessive; rain excessive in January, deficient in February and March, and excessive in April and May. Conditions favourable to both. Outturn remained much the same.

1886. Humidity and cloud excessive in January and March, and normal in February; rain excessive in January and March, but deficient in the remaining months. Conditions very favourable to the fungus. Outturn fell considerably, and in this case very probably on account of the fungus.

1887. Humidity excessive in January, but deficient thereafter: cloud excessive in January, normal in February, and deficient thereafter; rain deficient throughout. Conditions unfavourable to both, and especially to the fungus. Outturn fell still lower.

1888. Humidity and cloud excessive in January and February, and deficient thereafter; rain somewhat excessive in February, but deficient in the other months. Conditions in January and February decidedly favourable to the parasite. Outturn rose very slightly.

### North-west Provinces and Oudh.

1875. Humidity excessive in February, and deficient in March and April; no data for cloud; rain normal in January, excessive in February, and deficient in March and April. Excessive humidity and rain in February favourable to the fungus, but subsequent dryness unfavourable to further development. Outturn rose.

1876. Humidity deficient throughout; no data for cloud; rain deficient, except in March, when it was excessive. Conditions on the whole not favourable to the fungus. Outturn good.

1877. Humidity excessive in all months; cloud also, especially in January, March and April; rain excessive in January, February and March, and normal in April. Conditions very favourable to the fungus. Outturn fell, whilst we ought to have expected a good outturn.

1878. Humidity excessive in all months but March; cloud the same; rain excessive in January, but deficient in February and March, especially in the latter month. Conditions favourable to both host and parasite; but the outturn was very poor.

1879. Humidity deficient in all months, especially April; cloud normal in January, and excessive in February and March; rain deficient throughout, especially in February. Cloud was favourable to the fungus, but rain unfavourable. The deficiency of humidity and rain generally was unfavourable to the well-being of the host.

Outturn poor, the same as in the previous year, due probably more to the direct effect of weather on the host than to the presence of the parasite.

1880. Humidity deficient in January, but excessive in February and March; cloud excessive in February, but deficient in all the remaining months; rain generally deficient. Conditions fairly favourable to the host, but unfavourable to the fungus. Outturn rose, but slightly.

1881. Humidity on the whole excessive, especially in March and April; cloud also excessive, except in January, when it was markedly deficient; rain deficient, except in March. Conditions favourable alike to host and parasite; in the case of the latter, especially, the combination of cloud and rain in March. Outturn very slightly greater than in the previous year; the fungus was very probably repressive.

1882. Humidity deficient, except in January; cloud excessive in January, but deficient in February and March, and normal in April; rain about normal in January, deficient in the next three months. Conditions unfavourable to both host and parasite. Outturn fell very slightly, to the level of 1880 and 1877.

1883. Humidity on the whole deficient; cloud excessive in January and March, but deficient in February and April; rain deficient, except in March, when it was normal. Conditions somewhat unfavourable to the host, but the condition in March favourable to the fungus. Outturn remained the same as in the previous year.

1884. Humidity excessive in January, normal in February, deficient in March and April, especially in March; cloud on the whole deficient in January to March; rain deficient throughout. Conditions unfavourable to both host and parasite, but especially to the latter. Outtnrn rose very slightly.

1885. Humidity excessive in January and February, and normal in March; cloud very excessive in January, deficient in February, and excessive thereafter; rain excessive in January, normal in February, and deficient in March and April. Conditions favourable to the host, but on the whole not favourable to the fungus. Outturn rose.

1886. Humidity and cloud excessive in January and March, and normal in February; rain excessive in January and March, and deficient in February. Conditions favourable to the host, and very favourable to the fungus. Outturn fell; a good instance of the repressive influence of the parasite.

1887. Humidity and cloud excessive in January, but deficient in February and March; rain the same. Conditions unfavourable to both, especially to the fungus. Outturn fell still lower.

1888. Humidity excessive in January and February, especially the latter month, but deficient thereafter; cloud about normal in January and February, and deficient thereafter; rain excessive in January, and deficient thereafter. Conditions in January favourable to the parasite. Outturn much the same as in the previous year.

In reviewing these results, it appears to me that in the Central

Provinces the weather conditions and the outturns of 1877, 1878, and 1883, but especially 1878, strongly support the view I hold, that the deficient outturns were very probably due to the parasite. In the Punjab the case appears to me to be even stronger, as the years 1877, 1878, 1879, 1880 and 1881 were all years in which the weather conditions favoured the development of the fungus, and in which the outturns were lower than we should otherwise have expected them to be; while, on the other hand, the years 1882, 1883 and 1884 were adverse to fungal development, and the outturns steadily rose. Lastly, in the North-West Provinces and Oudh the conditions do not stand in strong relief, either for or against my argument. The weather conditions of 1877 and 1878 were on the whole favourable to both host and parasite, and the outturns fell, pointing to the fungus as the cause. In the years 1876 and 1880 the conditions were fairly favourable to the host, but decidedly unfavourable to the fungus, and in each year a rise in outturn was recorded. In 1881 and 1883, conditions were on the whole favourable to the host, and favourable to the fungus in March; but the favourable weather for the latter came late, and the outturn in the former year was slightly increased, and in the latter year remained stationary.

I will now proceed to make a few remarks regarding the causation of the disease. Long before De Bary rediscovered,* in 1865, by actual experiment, the connection between the barberry Æcidium and the rust of corn, such a connection was firmly believed in by farmers, both in Europe and America; and, indeed, the compulsory removal of all barberry bushes was enforced by legislation in several places, *e.g.*, by the Barberry Law of Massachusetts, published on Jan. 13th, 1755. This fungus, whose life-history is completed on the barberry, and cereals (wheat, barley, rye, oats), and certain wild grasses, goes by the name *Puccinia graminis* Pers. Its dignostic characters on the cereals are that the uredospore (*i.e.*, the orange-red spores on the leaves in the early stage, and popularly known as "rust") is more oval than round, and has two germ-spores on the short equator opposite one another; and that the teleutospores (*i.e.*, the spores from the black pustules, which are formed later, and which constitute the disease popularly known as "mildew") are naked, *i.e.*, not covered by the epidermis of the host, are much thickened at the apex, which is also well rounded, and are provided with long stalks. This fungus is the most prevalent, and probably the most destructive, in Europe. There are, however, two other species of rust and mildew whose life-cycles in Europe were likewise discovered by De Bary on the same crops. These are (2), *Puccinia rubigo-vera* DC. (synonyms, *P. striæformis* Westendorp, and *P. straminis* Fuckel); and (3), *Puccinia coronata* Corda. The former completes its life-history on several species of borages, and the latter on some species of buckthorn

* A Danish schoolmaster, Schoeler, appears to have been the first to demonstrate, by actual experiment, the genetic relationship between the barberry Æcidium and the rust and mildew of cereals. (See *A Monograph of the British Uredineæ*, by C. B. Plowright, 1889, pp. 52—54).

(*Rhamnus*). The main diagnostic characters of *P. rubigo* are that its uredospore is rounder than that of *P. graminis*, with several germ-spores irregularly scattered over its surface; and that its teleutospores are not naked but covered by the host's epidermis, are mostly squared at the free end without appreciable thickening, and are exceedingly short-stalked. The teleutospore beds are in Europe surrounded by hair-like structures termed technically paraphyses; but these structures were not present in any of the specimens I have examined in India. We need not consider the characters of the third species (*P. coronata*), since it is of rare occurrence on cereals, and plays no important part. I have never seen it myself on any Indian cereal, though I have found it frequently on a wild grass (*Brachypodium sylvaticum*).

The predominant part played by *P. graminis* in Europe led most observers in other parts of the world to assume that the same species was also the most destructive with them, and this notwithstanding the absence in many places of the barberry, which De Bary showed to be necessary for the continued existence of the parasite. Thus, throughout the plains of India there is no species of barberry, and I believe there is no barberry in Australia. In the case of the plains of India, it was necessary to assume that the wheat plants were attacked by the æcidiospores of the barberry, which had been wafted to them from enormous distances, as, with the exception of several species of *Berberis* in the Khasia hills, one on Parasanath (*B. asiatica*), two on the Nilgiris (*B. aristata* and *B. nepalensis*), all the rest are Himalayan. The spores are exceedingly minute, and it is quite possible that they may be carried by the winds to such immense distances. I found, however, from a careful examination of the specimens I received through the kindness of friends from the various localities I have already mentioned, that the most prevalent species is not *P. graminis*, but *P. rubigo-vera*.* Indeed, the only specimen of *P. graminis* I received came from Jeypore, where *P. rubigo* is also prevalent. Should further observation confirm the opinion which I am now inclined to hold, namely, that the main cause of rust and mildew in India is *P. rubigo*, we need no longer trouble ourselves with a barberry connection. But while we escape this difficulty we fall into another, namely, that, so far as our present knowledge extends, no Æcidium on any species of the *Borragineæ* is known. This is in itself, however, no matter of marvel, as few botanists have interested themselves in this region of their science, and such an Æcidium has never been looked for. It is more extraordinary that *P. rubigo* appears to be the most prevalent rust in the Simla region, where the barberry Æcidium (in one form at any rate) is most abundant, and where no borage Æcidium is known to me, although I have searched assiduously for such fungi generally for some years. I would not, however, have it understood that such an Æcidium

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* Since I noticed this, I received the Bulletin issued by Mr. H. L. Bolley, already referred to, and I find that in Indiana, also, *P. rubigo-vera* appears to be the main cause of rust.

certainly does not exist in the Simla region ; it is quite possible that it may have escaped my observation, though I do not think this probable, especially as, to be the cause of rust here, it must be common. I am more inclined to think that the life-history of *P. rubigo* has a different course from that taken in Europe, and that the subject would well repay thorough investigation, not only in the interests of science, but also in those of economy. I may add that I have recently found, by experiment, that the barberry Æcidium is produced by a teleutospore on a wild grass with all the characters of *P. graminis ;* but I have never found this teleutospore on any cvltivated cereal here. Moreover, the season during which the barberry Æcidium is produced here is the summer, whilst the wheat and barley crops are raised here, as in the plains, during the winter months, and are reaped in April and May.

I have figured the teleutospores obtained from specimens gathered at Dumraon, Jeypore, Gujrat, Simla, and the Ghilghit valley (Table II.); and, if these are compared with the figures I have copied from Frank, it will be seen that they are typical *P. rubigo* spores. This will be the more striking if these figures are compared with Fig. 1, taken from a specimen of Jeypore wheat, representing a typical *P. graminis* teleutospore. Moreover, the teleutospore beds were in all cases (except those from which Fig. 1 were taken), covered with epidermis, and the uredospores, wherever I found them (Fig. 4), presented the characters of *P. rubigo*. It is very astonishing to find that *P. graminis* occurs in Jeypore, and that the natives recognise the distinction, since they call *P. graminis* "Rolli," and *P. rubigo* "Rolla." I am inclined, however, to think that it is a mere coincidence that the specimens I received labelled "Rolli" and "Rolla" happen to have been different species, because it was stated by the zemindar that "Rolla" (*P. rubigo*) was less destructive than "Rolli" (*P. graminis*); whereas from a very careful inspection of the grains I myself took from the ears of each named specimen showed that, on the contrary, the destructive effect of *P. rubigo* ("Rolla") was, as I have already shown, very considerably greater than that of *P. graminis* ("Rolli"). If *P. graminis* is related to no other Æcidium but that on the barberry, and there is no reason to doubt it, then we have here an excellent instance of the great distance the æcidiospores can be carried, since, if these spores came from the Himalayas, the nearest barberry habitat, they must have travelled about 300 miles.

I should not omit to note here, that *P. rubigo* may apparently survive from year to year without any intermediate æcidial host, as the mycelium which produces rust and mildew has the power of surviving in a perennial form in the roots of grasses. Such a continuous succession of the rust mycelium is, however, much more probable in Europe, where crops, both of cereals and wild grasses, overlap one another, than in India, where analogous conditions are apparently absent or much rarer. I am not aware that a single species of our summer or "kharif" crops (millets for the most part), which alternate with wheat in cultivation, harbours any species of

Uredine (the order to which rust belongs).* I have endeavoured to get definite information on this important subject, but without success; and my own continuous and specially directed observations in Simla have failed to bring to light the existence of any Uredine on the summer crops which alternate with our winter cereal crops. I have, for example, visited fields in the summer months with the special purpose of finding some species of Uredine, since I knew (also by personal inspection) that the wheat crops immediately preceding have been enormously rusted and mildewed, and found no trace of any; and then I have again visited these same fields when they were again bearing wheat crops succeeding the above-mentioned summer crops, and have found them again largely rusted. I have also looked on wild grasses for surviving rust, but have found none.

An investigation into the causation of rust would be by no means a simple one. It will be gathered from what I have already written that the subject is surrounded by many difficulties. Still there is, I think, every hope that a patiently conducted study of it would be rewarded with success, and, the cause being known, we would be in a position to apply remedies. Before light is shed upon its true cause, probably much destructive work must precede constructive. In illustration of my meaning, I may draw attention to Sleeman's view that the rusting of wheat was due possibly to the transference of the disease from "Ulsee" (linseed). At the time he wrote, such an explanation was plausible enough, and even now (with the data he had) it is within the bounds of possibility. Nothing is known, so far as I am aware, even at the present time, of the nature of that disease on "Ulsee"; but, being struck with his explanation, I obtained a specimen of such diseased "Ulsee" from Dumraon (whence I also at the same time got the mildewed wheat specimens above referred to), and found it to be a species of *Melampsora* † (a genus certainly of Uredineæ), and this renders it almost certain that the disease on "Ulsee" is in no way related to the rust of wheat. This is an instance of partial destructive work clearing the way towards a final solution of the rust question—partial, because it still remains to be proved that the teleutospores borne on the "Ulsee" do not in fact attack the wheat plant. It is extremely improbable that they do. Then, again, we must clear our ideas regarding the part played by the barberry. That it does not play any considerable part here in India appears highly probable; but that it does play some part is certain, from the occurrence of *P. graminis* in Jeypore.

In conclusion, I must express my thanks to many friends for their assistance in procuring specimens for me of rusted crops, and for much valuable information on the prevailing local ideas regarding the causation of this blight. These are often quaint, but as

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* Since this was written, I have obtained *Puccinia sorghi* Pers., on *Sorghum vulgare;* but although *Sorghum* is usually a summer crop, yet the specimens I obtained from the Poona district were on a winter crop.

† Probably *Melampsora lini* Pers.

they are not of scientific interest I have not noted them in this essay. I am especially indebted to Surgeon-Major T. H. Hendley, Rao Bahadur Thakuran Govind Singh Bahadur, of Chomu, and Thakuran Ragonath Singh, of Achrole, for the excellent specimens I received from Jeypore. These were the most interesting as well as the most carefully collected specimens I received, including, as they did, specimens of true *P. graminis*, and showing that the zemindars are well acquainted with the difference between *P. graminis* and *P. rubigo-vera*. Lieut. Manners-Smith was also kind enough to send me specimens from time to time, from Ghilghit, and these were of great and special interest. My thanks are also due to Dr. George Watt, C.I.E., for the interest he has taken in this matter, and for statistical information.

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# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 25.)

**Trollius europæus** L. Sp. Pl. 556 (1753). **1597.** "In most places of Yorkeshire and Lancashire."—Ger. 809.

**Helleborus viridis** L. Sp. Pl. 558 (1753). **1562.** "Greate plentye in a parke besyde Colchester, and in the west parke besyde Morpeth a litle from the river called Wanspek."—Turn. ii. 160, back. "In some woods in Northamptonshire."—Park. Theatr. 212 (1640).

**H. fœtidus** L. Sp. Pl. 558 (1753). **1597.** "Wilde in many woods and shadowie places in England."—Ger. 826. "At Cherry Hinton" (Cambs.).—R. C. C. App. i. 6 (1663).

**Aquilegia vulgaris** L. Sp. Pl. 533 (1753). **1570.** "Pratensis etiam est Angliæ." — Lob. Adv. 339. "Many about Broadsworth and Hample woods" (Yorkshire).—How, Phyt. 9 (1650).

**Aconitum Napellus** L. Sp. Pl. 532 (1753). **1821.** Found by Rev. Edward Whitehead [in 1819] "in a truly wild state on the bank of a brook, and on the river Teme in Herefordshire."—Purton, Midl. Fl. iii. 47, note.

**Actæa spicata** L. Sp. Pl. 504 (1753). **1597.** "Groweth in the north parts of Englande, neere unto the house of the right worshipfull Sir William Bowes."—Ger. 829.

**Berberis vulgaris** L. Sp. Pl. 330 (1753). **1597.** "About a gentlemans house called Master Monke, dwelling in a village called Iver [Bucks], two miles from Colbrooke, where most of the hedges are nothing else but Barberie bushes."—Ger. 1144.

**Nymphæa lutea** L. Sp. Pl. 510 (1753). **1562.** "In meres, loughes, lakes, and in still or standyng waters."—Turn. ii. 65.

**N. pumila** Hoffm. Deutschs. Fl. 241 (1800). **1811.** "In Highland lakes."—E. B. 2292. "Discovered in 1809 by Mr. Borrer



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in a pool near the farm of Corric-chastel, at the foot of Ben Chonachan."—Hook. Fl. Lond. t. 165.

**Castalia speciosa** Salisb. Ann. Bot. ii. 71 (1805). **1562.** "In meres, loughes, lakes, and in still or standyng waters."—Turn. ii. 65. "In Holshot river, in Hampshire."—R. Turner, Botanol. 179 (1664).

**Papaver Rhœas** L. Sp. Pl. 507 (1753). **1562.** "With us it groweth much amongest the rye and barley."—Turn. ii. 77.

**P. dubium** L. Sp. Pl. 1196 (1753). **1686.** "In agro Cantabrigiensi observavit et ad nos ejus capitula transmisit D. Pet. Dent."—Ray, Hist. i. 856.

**P. Lecoqii** Lamotte, Not. Pap. dub. 5 (1851). **1860.** "Very abundant about Cambridge."—Bab. Fl. Cambs. App. 2, p. 301.

**P. Argemone** and **P. hybridum** L. Sp. Pl. 506 (1753). **1597.** "These plants do growe in the corne fieldes in Somersetshire, and by the hedges and high waies, . . . as yee travell from London to Bathe."—Ger. 301.

**Meconopsis cambrica** Vig. Hist. Nat. des Pavots, p. 48 (1814). **1640.** "In many places of Wales."—Park. Theatr. 370.

**Glaucium flavum** Crantz, Stirp. Aust. fasc. ii. 141 (1763). **1548.** "In Dover clyffes, and in many other places by the sea syde."—Turn. Names, F. i. "Also in Dorsetshyre."—Turn. ii. 77.

**Rœmeria hybrida** DC. Syst. ii. 92 (1821). **1660.** "In the corn fields beyond Swaffham as you go to Burwell" (Cambs.).—R. C. C. 111.

**Chelidonium majus** L. Sp. Pl. 505 (1753). **1548.** "Groweth in hedges in the spring, & hath yealowe iuce."—Turn. Names, D. v.

**Corydalis claviculata** DC. Fl. Fr. iv. 658 (1805). **1597.** "In a corne fielde betweene a small village called Charlton and Greenwich."—Ger. 929.

**Fumaria capreolata** L. Sp. Pl. 701 (1753), (aggregate). **1670.** "Ad muros vel sepes."—Ray, Cat. 122 (1670).

**F. confusa** Jord. Cat. Jard. Bot. Dijon (1848), ex Linnæa, xxiii. 469. **1848.** "Tintagel, Cornwall, Mr. Borrer" (named *F. agraria* by W. Mitten).—Lond. Journ. Bot. vii. 556 (1848).

**F. muralis** Sond. in Koch Syn. ii. 1017 (1845). **1860.** Barnes, Surrey; Shrewsbury, &c.—Babington in Journ. Linn. Soc. vol. iv. 160.

**F. pallidiflora** Jord. in Schultz Arch. 305 (1855). **1860.** Salcombe and Ilfracombe, Devon.—Babington in Journ. Linn. Soc. iv. 162.

**F. densiflora** DC. Cat. Monsp. 113 (1813). **1843.** Near Edinburgh; and "from Dover, gathered by R. M. Lingwood, Esq., in or before 1839."—Babington, Trans. Bot. Soc. Edinb. i. 34, as "*F. calycina*, n. sp."

**F. officinalis** L. Sp. Pl. 700 (1753). **1548.** "Groweth among the corne."—Turn. Names, B vii., back.

**F. Vaillantii** Loisel. Not. 102 (1810). **1843.** "Plentiful throughout England."—Babington in Trans. Bot. Soc. Edinb. i. 36 (paper read 13th Feb. 1840). Man. ed. 1, p. 14.

**F. parviflora** Lam. Dict. ii. 567 (1786). **1597.** "In a corne

fielde betweene a small village called Charleton and Greenwich."—Ger. 929. Gerard's figure represents *F. spicata*, but he probably intended this species. "Discovered by Mr. Jacob Rayer in the corn-fields about Woldham, near Rochester, in Sept. 1792."—E. B. 590.

**Mathiola sinuata** Br. in Ait. Hort. Kew. iv. 120 (1812). **1633.** "Gathered by Mr. George Bowles upon the rocks at Aberdovye in Merionethshire."—Ger. em. 461.

**M. incana** Br. in Ait. Hort. Kew. iv. 119 (1812). **1808.** "Discovered by Mr. Turner and Mr. W. Borrer in 1806 on the cliffs to the east of Hastings."—E. B. 1935.

**Cheiranthus Cheiri** L. Sp. Pl. 661 (1753). **1548.** "Hertes ease or wal Gelefloure, it groweth upon the walles."—Turn. Names, G viij.

**Nasturtium officinale** Br. in Ait. Hort. Kew. iv. 110 (1812). **1538.** "Water cresses."—Turn. Libellus. "Groweth muche in brokes and water sydes."—Turn. Names, G iij, back.

**N. sylvestre** Br. in Ait. Hort. Kew. iv. 110 (1812). **1633.** "I have sometimes found [this] in wet places."—Johnson, Ger. em. 247.

**N. palustre** DC. Syst. ii. 191 (1821). **1713.** "Moist ponds, &c., London."—Pet. Herb. Brit. 49, 9.

**N. amphibium** Br. in Ait. Hort. Kew. iv. 110 (1812). **1597.** "In ditches, standing waters and rivers. . . . . in the chincks amongst the mortar of a stone wall that bordereth upon the Thames by the Savoy in London."—Ger. 186.

(To be continued.)

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## MRS. GRIFFITHS'S ALGÆ.

In last year's volume (p. 191) we pointed out the error into which Dr. Dyer (in the *Annals of Botany*) had fallen with regard to the disposition of Mrs. Gray's Algæ. In the last issue of the *Annals*, Messrs. Batters and Holmes show that Dr. Dyer was equally at fault in his remarks on the whereabouts of Mrs. Griffiths's Seaweeds. In this matter, however, we ourselves were somewhat to blame, for, on the faith of the Kew Herbarium Report for 1862, we stated (*Journ. Bot.* 1889, 47) that Mrs. Griffiths's plants were at Kew. Mr. Carruthers in a letter to Mr. Batters, which was sent to, but not published in, the *Annals*, gives the history of Mrs. Griffiths's collections; and, as the matter is of some interest, he has kindly allowed us to publish a copy of his letter in these pages:—

"British Museum (Natural History),
"12th June, 1891.

"My dear Mr. Batters,

"In answer to the inquiry in your letter of the 5th inst., as to Mrs. Griffiths's collection of Marine Algæ here,

I have to inform you that it was obtained direct from Mrs. Griffiths in June, 1852. It consists of 780 specimens, representing 293 species, and though it has been incorporated with the British Herbarium, the series remains complete. Mrs. Gray, when she mounted the British Algæ in the Museum, was not permitted to remove any of the specimens.

"I had made a note of the acquisition of the collection of Mrs. Griffiths's Seaweeds by the Linnean Society when going over the *Proceedings* for one of my addresses from the chair. It is obvious to me that, if any collection now existing can be looked upon as specially authoritative for Mrs. Griffiths's estimate of the species of Algæ known to her, it is that in the possession of the Linnean Society. The terms under which the collection was acquired are thus recorded in the *Proceedings*, under date Nov. 4th, 1858:—'The valuable collection of British Algæ, formed by the late Mrs. Griffiths, and arranged according to Harvey's *Manual of British Algæ*, presented by the subscribers to a fund for its purchase.' The Fellows of the Society sufficiently interested in Algæ to subscribe at the time of her death for the purchase of Mrs. Griffiths's herbarium knew of course what they were purchasing.

"The collection of seaweeds acquired by Kew, four years after Mrs. Griffiths's death, through Miss Burdett-Coutts (who is no algologist), was more extensive than that acquired by the British Museum or the Linnean Society, if the account given by the present Director of Kew Gardens 'on his faith' expresses anything like the facts of the case. From the 'very large quantities of duplicates' contained in Miss Burdett-Coutts's collection, it appears to have consisted of, or at least to have contained the bulk of, duplicate specimens not required for Mrs. Griffiths's arranged herbarium now at the Linnean Society's rooms.

"Permit me to say that you and Mr. Holmes somewhat stretched the meaning of 'type specimens' when you applied this designation to Mrs. Griffiths's collection at the Linnean Society; for though in respect of British Seaweeds Mrs. Griffiths fully deserved the title, '*facile regina*,' she never described a species, and could not consequently have left *type specimens*. It must be said, however, that she had a singularly clear notion of the species with which she was acquainted; and it is important to notice that whatever value the Griffithsian specimens at Kew may have possessed as representing Mrs. Griffiths's estimate of the species, they possess no longer, seeing that Mrs. Gray (who had no critical knowledge of Algæ) was allowed to remove what she thought were duplicates: and what remains in the Kew Herbarium represents consequently not Mrs. Griffiths's, but Mrs. Gray's estimate of the species.

"Yours faithfully,

"WILLIAM CARRUTHERS."

# THE PLEA OF CONVENIENCE.

By the Editor.

Mr. Hemsley contributes to *Nature* of Dec. 24th, under the guise of a review of Dr. Kuntze's new book, an elaborate defence of the principles (or want of them) on which "the Kew botanists" have been guided in questions of nomenclature. On former occasions our comments on Mr. Hemsley's articles have been refused insertion by the Editor of *Nature*, so we propose here very briefly to refer to his main contention.

The advantages attending the adoption of the DeCandollean laws are manifest. Starting from a definite date,—that at which the binominal system was inaugurated,—and governed by certain defined principles, it is at any rate possible to arrive at finality, so long as these principles are adhered to. If the publication of Linnæus's *Genera Plantarum* (1737) be taken as the starting-point for genera, and of his *Species Plantarum* (1753) for species, we know exactly the limits of our researches into the past. Whether the binominal employed by the author who first placed the plant in the genus in which it is now retained, or the oldest specific name, must in every case be recognised, does not affect the present question, and need not now be entered upon.

To the definite course of action which these principles imply, Mr. Hemsley, as spokesman for "the Kew botanists," opposes the plea of convenience. "The idea of giving a gardener . . . . one of these resuscitated generic names with a specific name tacked on to it by a person who has done nothing else except put his initials to it is too absurd." It is not so absurd as it is to suppose that the average gardener knows or cares whose "initials" are put to the name; but this by the way. "All the literature connected with the plant is under another name, all the figures likewise, and, one might add, all the persons almost who know anything about the plant know it by the old name." This all seems very sad; but how does it differ from what follows when some well-known plant is transferred by "the Kew botanists" to another genus, for botanical reasons?

To take an example, the plants known in gardens as *Glo inia* are placed by Bentham and Hooker under *Sinningia*. Most of "the literature connected with the plants is under another name, all the figures likewise, and all the persons almost who know anything about the plants know them by the old name." "The idea," therefore, to continue quoting from Mr. Hemsley, "of giving a gardener a resuscitated generic name"—for *Sinningia* dates from 1825—"is too absurd,"—or if not, why not?

Do "the Kew botanists" follow one system for "the botanical nomenclature current in gardens" (for which, according to Mr. Hemsley, they are "almost exclusively responsible"!) and another for "the vast named collections at Kew" (the naming of which, by the way, in the living plants leaves something to be desired)? If so, how does this tend to convenience? If not, why is it more inconvenient to change a name for literary than for scientific reasons?

Mr. Hemsley allows his feelings to run away with him when he says that "we are asked to sacrifice everything that belongs to the present for the sake of a 'principle' that involves endless confusion." Every change causes some confusion; but the sooner it is made, the less will the confusion be. If Bentham and Hooker, for instance, had adopted the earlier name *Trichosporum* for *Æschynanthus*, they would have been followed by Mr. C. B. Clarke, and at least half the species would have at once received their proper name: now, so soon as anyone chooses to re-name them, the names under which they are published must become synonyms. As to the causing of confusion,—of unnecessary confusion, moreover,—"the Kew botanists" can hardly plead exemption from that charge. Mr. Hemsley must surely have forgotten the wonderful Kew seed-list for 1885, a notice of which appeared in this Journal for June, 1886: one would like to know what the gardeners and others "interested in vegetable products" thought of "Delphinium Monsieur Viola Hort.," and the large number of similar names which the list contained.

Mr. Hemsley quotes with approval Mr. Bentham's dictum that it would be "mere pedantry, highly inconvenient to botanists, and so far detrimental to science, now to substitute *Fibichia* for *Cynodon*, or *Sieglingia* for *Triodia*." Yet both of these are adopted in the last two issues of the *London Catalogue*, and *Sieglingia* appears in two local floras; and, as far as one can judge, "nobody seems one penny the worse." If Dr. Kuntze "imputes unworthy motives to Bentham," he merits Mr. Hemsley's reproof; but it is notorious that the literary side of the *Genera* is far less satisfactory than the scientific, and it is to be regretted that one or other of the illustrious authors did not devote more attention to this part of the work.

It appears to us that the time has come for a new Conference on Nomenclature, from which "the Kew botanists" would not, as on a previous occasion, ostentatiously hold aloof, and at which the views of Dr. Britton and Prof. Greene would be represented, as well as those of Dr. Otto Kuntze, and those more rational ones of which Mr. B. D. Jackson is the exponent. Failing this, it seems to us that the DeCandollean Laws should be followed. One thing, however, is certain:—whatever standard of nomenclature may ultimately prevail, the illogical and unphilosophical basis advocated by Mr. Hemsley cannot be accepted, even tentatively, nor even though "the Kew botanists" give it their powerful support. The adoption of convenience as a principle is entirely unjustifiable, and must delay the bringing about of that finality which we all desiderate.

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## *SHORT NOTES.*

The Madrid Herbarium. — So little is known of the botanical collections at Madrid, that a short note on the subject may be worth printing. The Botanic Garden is situated on the prado or main boulevard of Madrid, close to the world-famed gallery of pictures. It is a comparatively small piece of ground, about a quarter of a mile long and rather less broad, and contains several

conservatories and a museum. The collection consists principally of plants arranged and classified under their natural orders; amongst the well-developed trees in various parts of the Garden are specially to be noticed—*Celtis australis*, *Sophora japonica*, *Melia Azedarach*, *Catalpa Bungeana*, *Diospyros virginiana*, *Cercis Siliquastrum*, *Gleditschia horrida* var. *inermis*, *G. triacanthos*, and *G. caspica*. There is a bust of Linnæus in the grounds, and also statues of Quer (the first Director of the Gardens), Clemente, Lagasca, and Cavanilles. The herbarium, which is in the Museum, together with the botanical library, consists principally of the collections of Cavanilles, Rodriguez, Lagasca, and Clemente, all of whom were formerly connected with the Gardens. They are arranged and perfectly accessible, and contain a very large proportion of the types of the species accredited to those distinguished botanists. Besides these, there are the plants gathered by Ruiz and Pavon in Peru, Moçino and Sessé in Mexico, and Mutis in New Granada; but the collections of Moçino and Sessé and Mutis remain apparently in the boxes in which they were sent home, and seem to be unarranged. A series of drawings by Mutis, numbering 6701, of folio size, the greater proportion in colours, form a most valuable contribution to the knowledge of the Flora of the New Granadan region of South America. They are classified, and to some extent named. There are also some inedited Ruiz and Pavon MSS. and drawings, and one of the rooms in the Museum is devoted to a fruit collection, which is used for teaching purposes. I have to thank Sig. Colmeiro, the present Director, for his kind permission to work at the herbarium.—E. G. Baker.

The Date of Rivinus' Tetrapetalæ (Journ. Bot. 1891, 310). —The Editor has done well in pointing out an error of mine as to the date of the work named above. He quotes me as giving, in the *Flora Franciscana*, the year 1690 for the Tetrapetalæ, and leniently suggests that I "may have access to an edition not recorded by Pritzel, who gives 1691 as the date of publication." Upon looking up this matter anew, I find myself to have taken the date 1690 from the general title at the beginning of the volume as a whole; and that the actual date of that part which embraces the Tetrapetalæ is, as Mr. Britten suggests, 1691. As to the "17" of my citation, it need only be said that there are no pages of letterpress either accompanying or devoted to the plates. The only pages, after the preface, are those of the plates; and upon these no numbers are printed. But even so extensive and important a work as Jacquin's *Icones* is in the same case. One is obliged to go through the work, and write the whole six hundred and forty-eight numbers, in pen or pencil, for himself. Everyone does that, and the work is constantly quoted by number of the plate. I have done the same with my Rivinus, and cite him in the same way. *Trifolium repens* is the seventeenth in the succession of his figures under the Tetrapetalæ heading.—Edward L. Greene.

[We venture to think that Prof. Greene's mode of citation is open to objection. A number following the title of a book is always assumed to refer to a page of the work quoted: thus Prof. Greene,

following general custom, writes, "Benth. Pl. Hartw. 108." When a plate is cited, it is usually as "t." Moreover, what Prof. Greene calls the "preface" is an introduction of twenty pages, in which the plants figured are discussed, and the last eleven of which are styled "Declaratio Tabulæ." A further inconvenience is caused by the fact that Prof. Greene's "17" refers, not to the order of plates, but to that of *figures*, the *plate* being the 13th. When MS. numbers are supplied, either of plates or figures, they should be placed in square brackets: we think the former, not the latter, should be numbered. Had Prof. Greene written "[t. 13 lower fig.]" or even "[fig. 17]," his meaning would have been clear: but "Rivinus, Tetrap. 17" naturally bears the interpretation which we placed upon it.—Ed. Journ. Bot.]

Mosses of North-east of Ireland.—A note by Mr. H. N. Dixon having reference to the mosses of the north of Ireland, which appeared in Journ. Bot. 1891, p. 359, and another by Mr. H. C. Hart in your last issue, are somewhat misleading, and seem to require a brief notice by me. Mr. Dixon, after an interesting list of mosses which he collected during a short trip to Donegal, gives what purports to be a list of mosses not mentioned in the *Flora of the North-east of Ireland*, but which were found by him on the Antrim coast. This list, however, when examined, melts down to one species certain, *Grimmia Hartmanni*, and one uncertain, *Campylopus Schimperi*. Amongst plants selected, "on account of their apparent rarity," for special record with the two above mentioned, one would scarcely expect to find, among others, such names as *Dicranella cerviculata* and *Dicranum pellucidum*. Mr. Hart refers me to a list of Irish mosses collected by himself, and published in Journ. Bot. for 1886. These records he imagines were overlooked in the compilation of the *Flora of the North-east of Ireland*. Such, however, was not the case. Mr. Hart's list has just three references to the North-east:—No. 1. *Trichostomum littorale* (*Mollia littoralis*) is duly recorded in *Flora*, p. 215. No. 2. *Ditrichium homomallum* is an error on Mr. Hart's part; Carlingford Mountains are not in Co. Down, as he states, but in Co. Louth, and therefore not in the North-east of Ireland. No. 3. *Plagiothecium elegans* (*Borreri*) was found in Mourne Mountains by several collectors prior to Mr. Hart's visit. Their better localised notes were used, and his was unnecessary.—S. A. Stewart.

Galium sylvestre in Berks.—Last August, Mr. F. Tufnail, of Reading, was fortunate enough to meet with the above plant on a chalky slope beneath Suleham Woods, near Pangbourne. I have seen the plant growing there, and am inclined to believe it to be native. The same slope, although not at this precise spot, it is true, is a habitat for *Euphorbia Cyparissias*, which is not usually considered to be native, and a few larches have been planted in the vicinity; but the *Galium* occurs not with or near these, but with purely native plants, such as *Gentiana Amarella*, *Galium Mollugo* var. *insubricum*, *Asperula cynanchica*, *Campanula glomerata*, *Cuscuta Epithymum*, &c. It is not what we are accustomed to call the type plant, but the variety with narrow, hairy leaves, to which in

England the name of *G. nitidulum* Thuill. has been applied. The lower part of the plant is distinctly hairy. It is an interesting addition to the Thames province.—G. CLARIDGE DRUCE.

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## *NOTICES OF BOOKS.*

*Revisio Generum Plantarum Vascularium omnium atque Cellularium multarum secundum Leges Nomenclaturæ Internationales cum Enumeratione Plantarum Exoticarum in Itinere Mundi collectarum.* Mit Erläuterungen von Dr. OTTO KUNTZE. Leipzig: Felix. London: Dulau. 1891. Pp. clv, 1011. 2 vols. 8vo. £2 0s. 0d.

DR. KUNTZE returned from his journey round the world in 1876, and his principal occupation since has been the determination of his plants, altogether about 7000 species, with nine new genera, 152 new species, and several hundred new varieties. But, as will be seen from the title-page, this part of the author's work is almost completely lost in the revision of genera and their contained species, which has been elaborated during the period of preparation. The remarkable character of this may be understood from his own statement, that he has monographically revised 109 genera, sunk 151, renamed 122 on account of their "homonymy," changed 952 names to their "legitimate" older ones, with a specific renaming of more than 30,000 plants on these grounds.

These results could only be attained by a strict adherence to some rule, and that a very peculiar one; and it must be admitted that the author has been thoroughgoing and relentless in his operations, which we have now briefly to examine, for a full discussion of them would expand this notice to an inordinate length.

In his introduction Dr. Kuntze states his reasons for his procedure, gives his ideas as to numerous alterations in the Laws of Nomenclature (this section extends to forty-six pages), gives a section in English as to insular errors, and supplies many useful ascertained dates of clashing publications; all of which it is impossible here to discuss. Suffice it to say, that the author takes the date of issue of Linnæus's first edition of his *Systema Naturæ*, 1735, as his arbitrary starting-point, and thenceforward assigns an equal value to every name that happened to be launched, as being of the same value from a systematic point of view. It follows from this that almost the whole of the work before us is vitiated by the fallacy that the Linnean nomenclature was full and complete in 1735. As a matter of fact, that nomenclature did not receive its completion till 1753, even as regards plants; whilst the zoologists had to wait till the tenth edition of the *Systema* in 1759. Until then the Linnean plan of arrangement was only one of many rival systems, each struggling for recognition, and not until that date did it assume the present accepted form. This consideration, of course, shuts out works which were drawn up on the old and pre-Linnean lines, such as Rumph's *Herbarium Amboinense*, six

volumes of which were issued before 1751, and the last volume, which came out in 1755, was uniform with its predecessors. It is needless to argue this at any length; the folly, to use no harsher term, of raking up names given by Moehring, or by Siegesbeck in 1736, before Linnæus had had an opportunity to fully explain his system, or even to supply the requisite details, needs no enforcing; the case of Siegesbeck is particularly gross, he being Linnæus's most virulent opponent. Probably no fewer than four-fifths of the names here proposed must fall, still-born, from this defiant disregard of accepted usage. Linnæus did not establish his reforms at a single stroke; on the contrary, he had a very hard battle to fight before he attained his supremacy. The first edition of the *Systema* was the outline sketch only, of which some details were filled in when the *Genera* appeared in 1737, and was successively worked upon, until, in 1753, the crown was set upon the labour of more than twenty years by the issue of the *Species Plantarum:* then, for the first time, it is possible to look upon the whole edifice, complete so far as the then state of botany extended. Still further, Linnæus, as the inventor of the received nomenclature, had a perfectly free hand, and it is monstrous to think of imposing upon him those restrictions which have become necessary since his time. Many genera, such as *Æthusa* and *Centaurea*, took their modern form, or were first introduced, in the *Species Plantarum*, and it would be the merest pedantry to urge that they should be written *Ethusa* and *Centauria*, because that was their first guise; and they have never, so far as I know, ever had any specific names attached to them. Unfortunately, with some folk, that seems to be all the better reason for striking out a new path; we shall see plenty of examples of this later on.

Some of the changes which were introduced by Linnæus, frequently in despite of his own canons, cannot be defended; thus, Bergius published his *Littorella juncea* in the Stockholm *Handlingar* in 1768, and when Linnæus took up that genus and species in his *Mantissa* he called it *L. lacustris;* it is therefore not surprising that so many botanists have gone back to the earlier and perfectly appropriate name.

It is now only fair that we should turn to the book itself to see how the author's crochets have taken shape. Here are a few proposed changes, which assuredly would not shorten citations:—

*Pterospermadendron* for *Pterospermum.*
*Myrtoleucodendron* for *Melaleuca.*
*Scolymocephalus* for *Protea.*
*Geraniospermum* ,, *Pelargonium.*

These seem bad enough, but worse follow:—

*Arundarbor* for *Bambusa.*
*Cacalia* ,, *Vernonia.*
*Callista* ,, *Dendrobium.*
*Palmijuncus* for *Calamus.*
*Sorghum* ,, *Andropogon.*
*Tragacantha* ,, *Astragalus.*

The last is the most flagrant instance of the author's whims. In the first edition of the *Systema*, Linnæus printed the names thus: under *Diadelphia*, *Decandra*, and subdivision "♂. Fr. Biloculari"—

*Biserrula. Pelecinus* T. *Tragacantha. Glycia. Astragalus* T.

meaning three genera. *Glycia* disappeared when the *Genera* came out, about fifteen months later, in favour of *Astragalus*, which genus in its turn, in 1753, absorbed also *Tragacantha*. Yet, on this slender foundation, and in spite of of the clear intentions of Linnæus himself, we have Dr. Kuntze adopting *Tragacantha*, sinking *Astragalus;* and then, growing more daring as his work went on, in his appendix actually turning over by name about 1500 species to the rejected name *Tragacantha*.

Another method is to take old names, alter the spelling under pretence of emending it, and then oust received generic names in their favour, for example :—

*Hondbessen* of Adanson becomes *Hondbesseion* of Kuntze, and to supersede *Pæderia*.

*Katoutsjeroe* of the same author is to be *Catutsjeron* of Kuntze, in place of *Holigarna*.

*Mokuf* of the same author becomes *Mokufua* of Kuntze, in place of *Ternstræmia*.

Again, sections have been allowed generic rank, never effected by their inventors, with spurious priority : here are a few :—

*Acanthonychia* (§ DC. 1828) for *Pentacænia*.
*Siphoneranthemum* (§ Oerst. 1831) for *Eranthemum*.
*Sphæroma* (§ DC. 1824) for *Sphæralcea*.
*Tetraceratium* (§ DC. 1824) for *Tetracme*.

Yet more abhorrent to common sense are the following :—The *Flora Zeylanica* was issued in 1747, being drawn up from Hermann's herbarium ; but a large number of the names then given were subsequently abandoned by their author, some having been based on imperfect material, others being uncouth, and derived from native names, so much so that Richter has not enumerated them all in his *Codex Linnæanus*. In 1887, Dr. Trimen, having access to the original set of plants, now in the Botanical Department, British Museum, and having, by his long residence in Ceylon, a very extensive knowledge of the flora, critically examined them, and published his determinations in the 24th volume of the *Journal of the Linnean Society*, pp. 129–155. These rightfully neglected names are now dragged forth by Dr. Kuntze, who thinks it would be convenient to use such names as these :—

*Gædawakka* for *Chætocarpus*.
*Kaluhaburunghos* for *Cleistanthus*.
*Santalodes* for *Rourea*.
*Stœchadomentha* for *Adenosma*.

Genera, which have been set aside because of their obscurity, cannot be revivified by any later study ; were it otherwise, no sensible person would wantonly inflict a wrong on the botanical commonwealth by ascertaining the genera of old authors ; as it is it can only be of antiquarian interest. Still, even Dr. Kuntze sets some limit, and does not sanction the use of generic names of more than six syllables.

Here are a few more names from this store-house of topsy-turveydom :—

*Alga* for *Posidonia*.
*Erica* for *Calluna*.
*Obolaria* for *Linnæa*.
*Acetosella* for *Oxalis*.
*Ericodes* for *Erica*.
*Ricinocarpus* for *Acalypha*.
*Oxydectes* for *Croton*.
*Trophæum* for *Tropæloum*.

It should be noted that "*Obolaria borealis* OK." is to supersede the *Linnæa borealis* of the Master: it seems hardly decent to bring forward Siegesbeck's apparently contemptuous name in place of that which was expressly desired by Linnæus himself, as emblematic of his own fate, a northern plant, lowly, flowering early, and long neglected, which became his crest when he was ennobled, and is now the badge of the Linnean Society of London.

Reference has been made to the licence which Dr. Kuntze allows himself in amending names; this cuts two ways, for he conceives himself also bound to abolish all names which come within a certain degree of resemblance. One instance is that of Gray's *Tetraclea*, which is made use of to oust *Tetraclis* Hiern in favour of *Bisaschersonia* Kuntze; but the most striking example is the following: *Chlora* Adans. is hustled out of existence in favour of *Seguiera* Manetti (1751) non *Seguieria* Loefl. (1758): then *Chloris* Sw. is allowed to stand, but dispossesses *Chloræa* Lindl. for *Asarca*, enlarged, and *Chlorea* Nyl. becomes *Nylanderaria* Kuntze. Priority of place is sometimes allowed, as in the case of *Aruba* for *Simaba*, on account of its earlier position in the same volume, which was issued complete; but not allowed in the case of *Buda*, because of specific names having been applied to *Buda* first. There is sound sense in this, which, had it prevailed throughout the rest of the work, would have enormously diminished the number of novelties.

No one need be surprised to find the well-known names of *Calceolaria*, *Lobelia*, *Alliaria*, and *Limonium* applied in unfamiliar ways. There are, of course, some alterations which have been made before, such as *Hookera* for *Brodiæa*, and *Trichosporum* for *Æschyanthus*. *Angræcum* "Thouars" is to sink in favour of *Angorchis*, for certain reasons which are convincing to the author; but he has missed the fact that the species of *Angræcum eburneum*, which illustrated Thouars's memoir in 1824, was the very same as that of Bory de St. Vincent in 1803; Dr. Kuntze's objections are consequently invalid, and the ground is cut from under his feet. Again, he selects *Edwardia* for the name of *Cola acuminuta*, overlooking Dr. Stokes's *Bichea*, which was two years earlier.

The resulting amount of confusion may be best estimated from the few examples as follows:—

*Acalypha* L. becomes *Ricinocarpus* Burm.; *Ricinocarpus* Desf. becomes *Rœperia* Spreng.; *Rœperia* F. Muell. becomes *Justago* Kuntze.

*Agathosma* Willd. becomes *Hartogia* L.; *Hartogia* L. f. becomes *Schrebera* Thunb.; *Schrebera* Roxb. becomes *Nathusia* Rich.

*Ionidium* Vent. becomes *Calceolaria* Loefl.; *Calceolaria* "Juss." becomes *Fagelia* Schwenk.; *Fagelia* Neck. becomes *Bolusafra* Kuntze.

*Hosta* Tratt. becomes *Saussurea* Salisb.; *Saussurea* DC. becomes *Theodorea* (§ Cass.); *Theodorea* Rodr. becomes *Rodrigueziella* Kuntze.

Having thus effected a wholesale clearance, the author is enabled to adorn his pages with many graceful dedications to those botanists for whom he entertains a special regard, or from whom

he has received benefit. The recipients of such favours may not be very grateful for an empty compliment.

To avoid clashing with many of the old forms of names, Dr. Kuntze has contrived some very ingenious prefixes and suffixes: thus, botanists engaged in the study of the African flora are distinguished by the addition of *-afra* to their generic term; for instance, *Bolusafra*, *Ernstafra*, *Schinzafra*; American workers have the addition of *-amra*, such as *Watsonamra*, *Brittonamra*; Asia is applied as *Itoasia*, *Maximowasia*; India as *Kinginda*, *Ridleyinda*. Titles of honour are also pressed into the service, and we find *Aregelia* from von Regel, *Sirhookera* and *Sirmuellera* from Sir Joseph Hooker and Sir Ferdinand von Mueller; a species of *Helianthus*, which is dedicated to Dr. Urban, has the punning title of *Urbanisol*; and the class of compilers, those "harmless drudges," have the suffix *-ago*, from the Latin *ago*, *agere*, as *Justago*; Christian names are also combined with surnames, in the fashion of Lindley's *Asagræa*, thus, *Jamesbrittenia*, *Paulomagnusia*; names combined with places, as *Hallomuellera*, *Lippomuellera*, that is, Mueller of Halle, and Mueller of Lippstadt; and special work is also alluded to, as *Phaenomuellera*. *Nebrownia* and *Passaccardoa* are formed by means of the initials of Mr. N. E. Brown and Prof. P. A. Saccardo; whilst there are others which are simply commemorative, such as *Dyerophytum*, *Hemsleyna*, *Hookerina*, and *Nicholsoniella*.

It is saddening to think that so many years of diligent labour should have been spent on work which, if accepted, would plunge the science into a deeper confusion than that from which it was rescued by Linnæus. Indirectly the volume must do good, as showing the reckless extremes to which the "priority-at-any-price" men will go in pursuit of their whims. Changes in nomenclature, if absolutely necessary, can only be made by monographers, who, from their study of the entire material, are in a position to speak with authority; thus I may instance the rehabilitation of Aublet's genus *Tibouchina*, by Prof. Cogniaux, in the *Flora Brasiliensis*, and in his monograph of the *Melastomaceæ*, instead of the much later one, *Pleroma* of D. Don, which had come into vogue. The main lines of nomenclature have long since been laid down, and no attempt to transform them in this wholesale manner can avail: reform can only come in staid, sober fashion, as a dose of some drug, which, if given at once, would be fatal, may be beneficial if administered gradually. Inattention to this obvious truth has obscured the real amount of good work in these volumes, lost in the mass of proposed revolutionary changes, which Dr. Kuntze will find it difficult to persuade botanists of any nationality to adopt.

In close relation to the subject in hand, I have within the last few days heard, from Prof. C. S. Sargent, the strange doctrine that no name which has ever been used as a synonym can again be used as the name of a genus or species. If this extraordinary notion were followed it would place the entire nomenclature of plants at the mercy of any reckless or incompetent writer, who might easily reduce, and thus nullify, perhaps the life-work of the foremost phytologists. As an instance of how this might work, take the case

of the vast genus *Astragalus*, which, by the observance of this plan, would now be destitute of any name, for in turn all its names have been taken as synonyms, such as *Glycia*, *Phaca*, *Pelecinus*, *Tragacantha*, *Astragalus*, and *Biserrula*. Such a plan is absolutely unworkable, as many names which are now in common use have at one time suffered eclipse.

Before concluding it may be well to notice one other strange aberration, which is to be found in the last number of *Pittonia*, where Prof. Greene has revived some of Rafinesque's forgotten or condemned genera, and in accordance therewith renamed many species. *Jacksonia*, to supersede *Polanisia*, does not greatly matter, for *Polanisia* is now sunk in *Cleome*, therefore the homonym of Robert Brown is in no danger of extinction; but there are many others which might give some trouble. In this memoir, too, we find the citation of such unknown botanical authors as Catullus, and similar writers. This practice is not conducive to botany, nor even to scholarship, for it does not require much classical ability to look in a Latin dictionary to discover many plant names are there to be found cited as occurring in the pages of the Roman writers. A fact which cannot be gainsaid remains, that these men did not define these genera in a Linnean sense, and therefore to cite either them, or even comparatively much later ones for specific names, as "Dod." or "C. Bauh." is mere antiquarian, and not modern botany.

Vagaries such as these are sure to occur. Every age has had persons of the type of Rafinesque, and we need entertain little doubt that the good sense of the great body of workers in botany will in future, as in the past, sweep aside these flimsy webs of sophistry in favour of procedure that has in the main worked excellently for more than a century, which, being based upon foundations of practical utility, will endure long after these ingenious contrivers are as little followed as the old masters of pre-Linnean botany are at the present day.

B. Daydon Jackson.

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## *ARTICLES IN JOURNALS.*

*Annals of Scottish Natural History* (Jan.). — W. H. Beeby, 'On the Flora of Shetland.' — A. Bennett, 'Contributions towards a Flora of the Outer Hebrides.' — F. B. White, 'Notes on Scottish Willows.'—C. B. Plowright, &c., 'Fungi found at Stirling.'

*Bot. Centralblatt.* (Nos. 1, 2).—K. Pappenheim, 'Eine Methode zur Bestimmung der Gasspannung im Splinte der Nadelbäume' (1 plate).—(No. 1). E. Nickel, 'Ueber Narbenvorreife.'—(No. 2). Id., 'Ueber Lückenständigkeit und Spreitenständigkeit innerhalb der Blüte.'

*Botanical Gazette* (Dec. 15). — D. H. Campbell, 'Relationships of the Archegoniata.' — C. V. Riley, 'A new Herbarium Pest' (*Carphoxera ptelearia*). — B. D. Halstead, 'Notes on Peronosporeæ for 1891.' — B. L. Robinson, 'New Mexican Plants' (*Ayenia*

*Wrightii*, *Mimosa affinis*, *Buddleia Wrightii*, *Citharexylum Cinaloanum*, spp. nn.). — *Atriplex corrugata* S. Wats., sp. n. — J. W. Tuomey, Proliferation in *Phleum pratense* (1 plate).

*Bot. Zeitung* (Dec. 18, 29). — G. Klebs, 'Ueber die Bildung der Fortpflanzungszellen bei *Hydrodictyon utriculatum*.' — (Jan. 8, 15). F. Wildebrand, 'Einige Beobachtungen an Keimlingen und Stecklingen.'

*Bull. Torrey Club* (Dec.).—T. Morong, 'N. American Species of *Eriocaulon*.' — N. L. Britton, 'New or noteworthy American Phanerogams' (*Rubus Millspaughi*, *Mamillaria Notesteinii*, spp. nn.). — F. D. Chester, 'Diseases of Plants' (Anthracnose of Tomato (*Colletotrichum Lycopersici*, sp. n.); Leaf-spot of Celery; Blight of Water-melon Vines (*Phyllosticta Citrullina*, sp. n.) ).

*Gardeners' Chronicle* (Jan. 23). — *Thrinax Morrisii* Wendl. (figs. 20, 21).

*Journal de Botanique* (Dec. 16). — P. van Tieghem, 'Sur la limite de la tige et de la racine dans l'hypocotyle des Phanérogames.' — E. G. Camus, 'Monographie des Orchidées de France.' — G. Boyer, *Cycloconium oleaginum*.— A. Frémont, 'Sur les tubes criblés extra-libériens de la racine des *Lythrum*.'—(Jan. 1). C. Sauvageau, 'Sur quelques Algues phéosporées parasites.' — A. Franchet, *Kellogia chinensis*, sp. n.—L. Mangin, 'Étude historique et critique sur la présence des composées pectiques dans les tissus des végétaux' (concluded).—P. Hariot, *Hexagonia Sacleuxii*, sp. n.

*Nuovo Giornale Bot. Ital.* (Jan. 4).—A. Jatta, 'Materiali per un censimento generale dei Licheni italiani.' — C. Massalongo, 'Mostruosità osservata nei fiori di *Jasminum grandiflorum*.' — R. Cotelli, 'I movimenti del fiore e del frutto dell' *Erodium gruinum*.'

*Oesterr. Bot. Zeitschrift* (Jan.). — R. v. Wettstein, 'Die Arten der Gattung *Gentiana* aus der Section *Endotricha*.' — K. Fritsch, 'Ueber einige *Licania*-Arten.'—J. Freyn, 'Plantæ novæ Orientales' (*Astragalus Celakovskyanus*, *A. candicans*, *A. eginensis*, *A. erythrocephalus*, *A. tinctus*, *A. chlorotænius*, *A. genuflexus*, *A. dichroacanthus*, spp. nn.).—J. Velenovsky, 'Nachträge zur Flora bulgarica' (*Sedum Stribrnyi*, *Thymus thracicus*, spp. nn.).—K. Rechinger, 'Zur Kenntniss der Gattung *Rumex*.'—H. Sabransky, 'Zur Brombeerenflora der Kleinen Karpathen' (*Rubus graniticus*, *R. Baeumleri*, *R. adulterinus*, spp. nn.).

*Trans. Linn. Soc. London* (Bot. iii. pt. 6: Dec.). — A. Barclay, 'Life-history of *Puccinia coronata* var. *himalayensis* & *P. Jasmini-Chrysopogonis*' (1 plate).

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## *BOOK-NOTES, NEWS, &c.*

We have received the fourth part of vol. ii. of Mr. R. D. Fitzgerald's *Australian Orchids*, which is mainly devoted to illustrations of the genus *Prasophyllum*, including the species described in this Journal for May, 1885. The plant there named *P. attenuatum* is

now called *P. transversum*, the former name having been pre-occupied. There are also new species of *Diuris*, and other interesting plants. Mr. Fitzgerald is responsible for the plates as well as the descriptions of this important work.

We learn that Dr. Dyer is engaged in the preparation of the new *Guide to Kew Gardens*, which it was hoped would have been ready in time for summer visitors last year. We understand that the *Guide* has been out of print for five years,—it was last issued in 1885,—and that some of the Museum Guides and the Handbook to the North Gallery have been similarly inaccessible for a considerable period. The irregular issue of the Kew *Bulletin* (of which the October and November numbers have only just been issued), and the cessation some years back of the Reports of the Gardens and Herbarium, which contained much valuable information, suggest that Kew is not as much to the front with its publications as with its other undertakings. When the *Bulletin* first appeared, it was intended to be supplementary to the Annual Reports (see *Journ. Bot.* 1887, p. 123), and we regret that it has been allowed to replace them, which it does very inadequately. There seems a growing laxity in the dating of publications: the *Annals of Botany*, for example, seldom if ever appears in the month indicated on its cover.

The Smithsonian Institution has just issued (Bulletin 39, U. S. National Museum) a useful pamphlet by Mr. F. H. Knowlton, entitled *Directions for Collecting Recent and Fossil Plants.*

Dr. A. Zahlbruckner publishes in the *Annalen der K. K. Naturhistorischen Hofmuseums* some notes on the *Lobeliaceæ* of the Vienna Herbarium. He establishes a new genus, *Trematocarpus*, the type of which is *Lobelia macrostachys* Hook. & Arn.

We have received from Messrs. Kegan Paul, Trench & Co. a handsome volume by the late J. D. Sedding, entitled *Garden-craft, Old and New* (8vo, pp. xxviii. 215). Mr. Sedding, who is best known as an architect, was, as the Rev. E. F. Russell says in the memoir prefixed to the book, "master of many crafts," and garden-craft among them. A man of taste and cultivation, and one who exemplified in his work his knowledge of "the eternal fitness of things," he regards gardening and its associations from the æsthetic as well as the practical standpoint, and his essays are delightful reading. There is nothing in the way of technical botany in this pleasant volume; but the many botanists who are also flower-lovers, and have gardens of their own, will find it a desirable addition to their libraries.

We regret to announce the death of Miss Isabella Gifford, the well-known algologist, which took place at Minehead on Dec. 26th. We hope to publish some account of the deceased lady in an early issue, as well as of Mr. W. H. Fitch, who died at Kew on Jan. 14th.

Mr. T. H. Buffham is anxious that we should correct the very obvious misprint of "*filiformis*" for "*clavæformis*" which occurs in the explanation of the plate accompanying his paper in this Journal for November.

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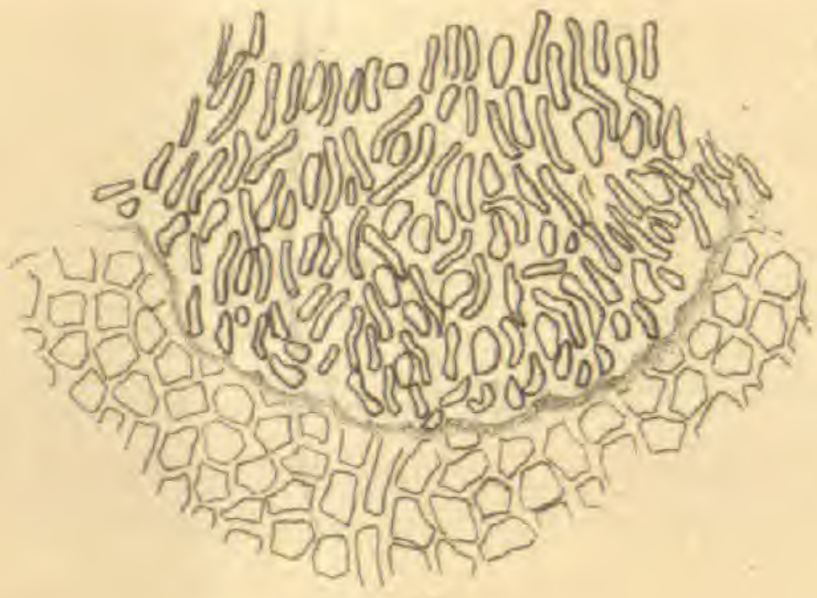

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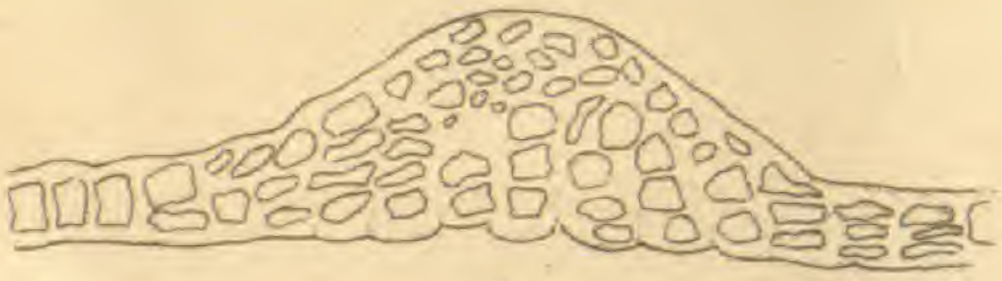

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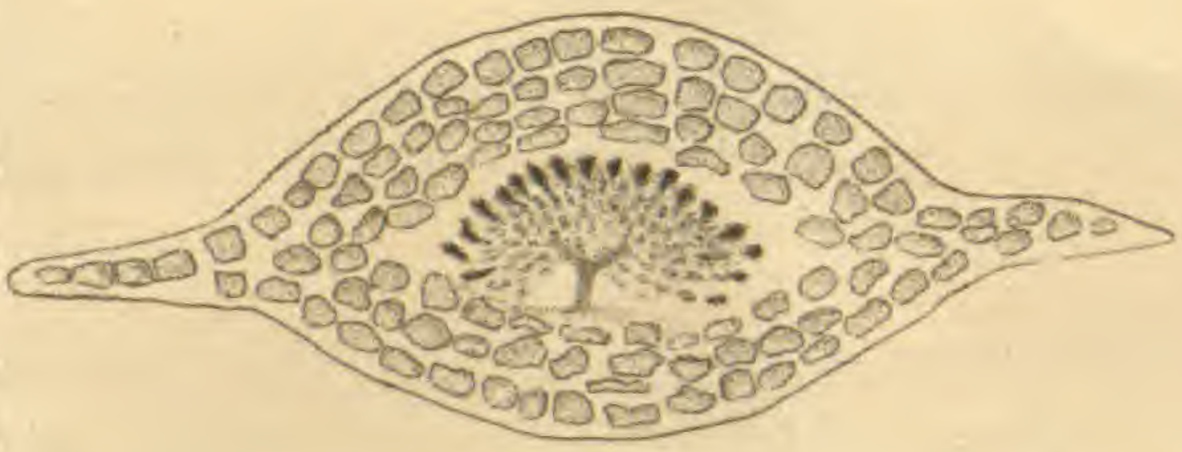

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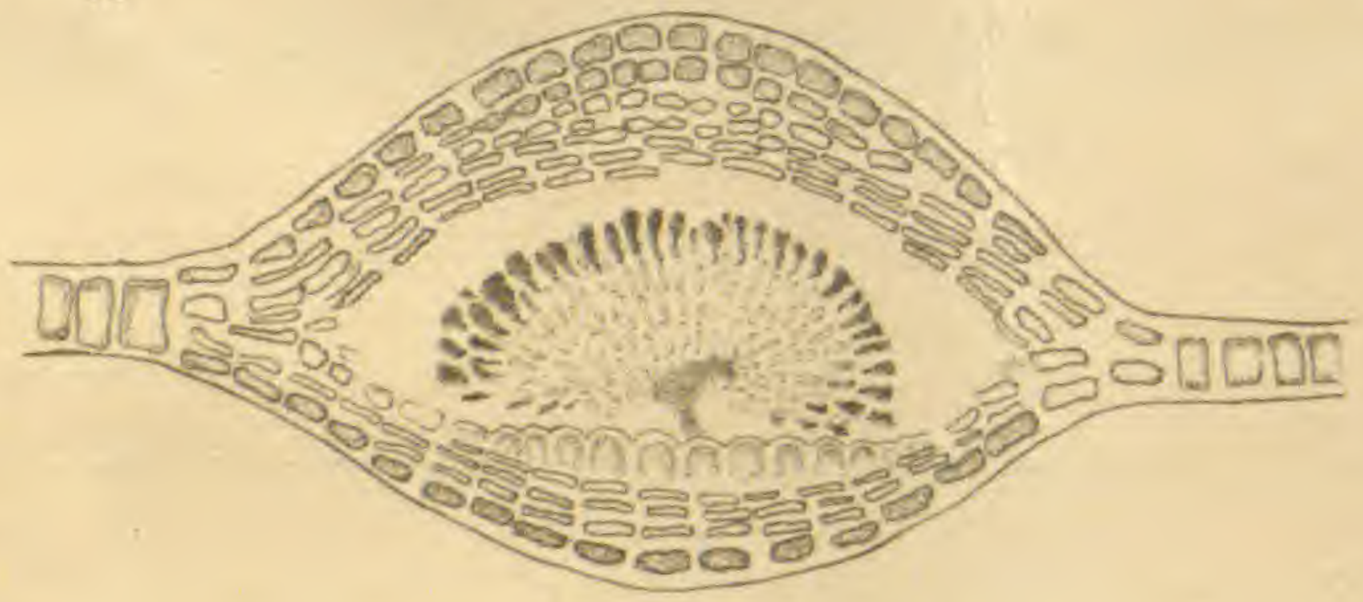

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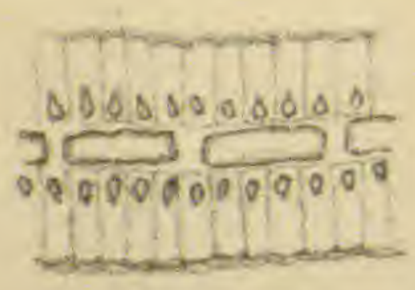

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F.A Batters del.
R Morgan lith.

West, Newman imp.

Gonimophyllum Buffhami *Batt.*

# *GONIMOPHYLLUM BUFFHAMI:* A NEW MARINE ALGA.

By E. A. L. Batters, B.A., LL.B., F.L.S.

(Plate 319.)

The curious alga which forms the subject of the present paper was placed in my hands by my friend Mr. T. H. Buffham, whose interesting notes on the reproductive organs of the marine algæ have done much to revive in this country an interest in the study of algology. It therefore gives me especial pleasure to be able to associate his name with an alga belonging to the *Florideæ*—a group to which he has devoted much attention.

On October 5th, 1891, Mr. Buffham received from one of his correspondents, Mr. J. T. Neeve, of Deal, a specimen of *Nitophyllum laceratum* Grev. with tetraspores, the curious feature of which was the presence on various portions of the frond of groups of minute leaflets. This fact had been noticed by Mr. Neeve, who wrote, "*N. laceratum* has a pale parasite on, besides the cystocarps (*sic*), in the leaflets." Mr. Buffham's attention having been arrested by this mention of "cystocarps," while the plant was, as has already been mentioned, a tetrasporic one of the usual form, he made a very careful examination of the various clusters of leaflets, with the result that he discovered some of them bore cystocarps, others antheridia or tetraspores, the different reproductive organs being confined to separate groups of leaflets, no two* of them occurring in the same. This discovery raised more than a suspicion in Mr. Buffham's mind that these leaflets were not part of the *Nitophyllum*, but were in reality a parasitic alga. In this belief, having obtained a fresh supply of material from Mr. Neeve, he sent specimens to Dr. Bornet and Prof. Schmitz, the latter of whom agreed with him in considering the leaflets those of a parasite, pointing out as additional evidence of this that they arose from a basal cushion composed in part of jointed filaments. Mr. Buffham, being now quite satisfied that he had detected a new alga, handed to me some beautiful preparations of the plant, with the request that I would name and describe it, as Dr. Schmitz, to whom he had at first applied, had not leisure to do so at present.

That these groups of leaflets are those of a parasitic alga closely related to, though generically distinct from, *Nitophyllum*, and are not part of the *Nitophyllum* itself, is, I think, sufficiently proved by the fact that they occur indifferently on any part of the frond, that the different groups found on one and the same specimen of *Nitophyllum* bear either antheridia, cystocarps, or tetraspores, quite irrespective of the organs borne by the host plant (which may be either barren, tetrasporic, or antheridic†), and, above all, by the endophytic filaments always present in the basal cushion from

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* In one instance a small male leaflet was observed growing out of a cystocarpic one.

† This parasite has not been observed on cystocarpic specimens of *N. laceratum*.

which they arise. To the naked eye the colour of the parasite serves to distinguish it from its host, as its fronds are pale brown, contrasting with the crimson lake of *N. laceratum*.

Where the *Nitophyllum* is attacked by the parasite, its tissues swell, and the cells of the thallus at these places divide horizontally, and, growing upwards, form rows of vertical cells, while at the same time a simultaneous downward growth of the parasite takes place, the articulated endophytic filaments creeping between the elongated vertical cell-rows of the host plant. These endophytic filaments—which must, I think, be regarded as the vegetative part of the new genus, as the function of the free leaflets appears to be entirely reproductive—ultimately form, together with the distorted cells of the *Nitophyllum*, a small wart-like prominence with a gelatinous investment. These wart-like prominences increase in size both vertically and laterally, and from their surface arise short thickish sprouts, which eventually grow into free, flat, simple or more or less lobed and laciniated fructiferous leaflets, composed of a single layer of cells at the margins, but of two or more layers at the portions occupied by the reproductive organs, which make their appearance at a very early stage in the development of the leaflet.

In mode of growth and structure these leaflets are analogous to the fronds of *Nitophyllum*, but differ from them in being purely reproductive in function, no sterile or vegetative leaflets having been observed. From two to four leaflets of very various shapes, oval, roundish, or more or less deeply lobed, arise from the same basal cushion, and continue to grow till they are from 1·5 to 3 mm. in diameter. The tetrasporic and antheridic sori occupy the entire leaflet, with the exception of a very narrow margin of growing frond, and as the leaflet increases in size, the sori also extend, following its marginal outline. The tetraspores near the base of the frondlets being formed first come to maturity, and are discharged while those situated near the margin are still in the earlier stages of development. The tetraspores are tripartite, with a slight tendency to the cruciate form of division. The procarps and cystocarps resemble those of *Nitophyllum* in all essential particulars. The procarps, however, are more numerous and prominent, and the sporiferous filaments of the cystocarps are more crowded, and arise from a few yellowish cells, not, as in *Nitophyllum laceratum*, from a well-marked stratum of large yellowish cells elongated upwards (*vide* Plate 319, figs. 8 & 9). There is also a slight difference in the structure of the walls of the pericarp.

At first sight it may appear curious that this parasite should be found on the fronds of a plant belonging to the same family (*Delesseriaceæ*) and tribe (*Nitophylleæ*) as itself; but this is by no means uncommon amongst parasitical *Florideæ*, e. g., *Actinococcus*, *Janczewskia*, &c.

The following is the diagnosis I propose for the new genus:—

**Gonimophyllum**, nov. gen.—Thallus minutissimus in *Nitophyllo laceratо* parasiticus, quasi duabus partibus compositus, inferiore parte (vegetativa) filis ramosis, monosiphoniis, irregularibus inter cellulas Nitophylli repentibus, et una cum cellulis distortis

plantæ gestatricis pulvinar cellulosum efficientibus, constituta; parte altera (in qua fructus evoluti) libera, plana, oblonga, subrotundata aut plus minusve lobata, cellulis angulatis areolata, avenia; fructus ut in Nitophyllo sed soris totam paginam laminarum occupantibus.

**G. Buffhami**, species unica.

Hab. In littore prope Deal in *Nitophyllo lacerato* inter limites æstus derelicto.

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Explanation of Plate 319.—Figs. 1—8 and 10—14, *Gonimophyllum Buffhami*. Fig. 9, *Nitophyllum laceratum*. 1 & 2, Portions of the frond of *Nitophyllum laceratum* with *Gonimophyllum Buffhami* parasitic on them, natural size; 3, portion of the surface of a basal cushion of *G. Buffhami*, × 50; 4 & 5, vertical section through basal cushion in two stages of development, × 50; 6, vertical section through procarp, × 50; 7, frondlet with cystocarps, slightly magnified; 8, transverse section of same, × 50; 9, transverse section through cystocarp of *Nitophyllum laceratum*, showing elongated cells from which the nucleus arises, × 50; 10, tetrasporic leaflet of *Gonimophyllum*, slightly magnified; 11, portion of same, × 50; 12, antheridic leaflet, slightly magnified; 13, portion of same, × 50; 14, transverse section through same, × 100.

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# ON SOME BRITISH *VIOLA* FORMS.

By William H. Beeby.

Since my previous paper on this subject (*Journ. Bot.* 1889, p. 226), attention has been given to the *hirta-odorata* section, and I now propose to offer some remarks on this group. Although a good many forms have been cultivated, the result has been less interesting than was anticipated, the most important feature being the determination of the plant hitherto known as "*Viola sciaphila* Koch?" It seems probable that our British *V. hirta* is a more variable plant than that of either Germany or Scandinavia; and although several forms have been thought to differ from *V. hirta* in the direction of *V. collina*, &c., I have not yet been able to separate them satisfactorily.

Viola odorata L.—A Surrey plant, gathered by the Rev. E. S. Marshall, is reported on by Prof. Wiesbaur as being apparently *V. tenerrima* Wiesb. Mr. Marshall's plant differs from ordinary *odorata* in having more rounded and very *thin* leaves. Nyman places *V. tenerrima* as a variety of *V. permixta*, which is evidently an error.

Var. *alba* Auct.—As has been pointed out already by Mr. Daydon Jackson, *V. alba* Besser is a distinct species, and not our white-flowered variety of the sweet violet. It is not known as a British plant, nor does it seem very probable that it will be found as a native.

*V. odorata* is a very variable species with us; some of its forms or states are only doubtfully separable from *V. multicaulis* Jord. Whether the latter is really distinct or not seems to me very uncertain.

V. ODORATA × HIRTA. — Prof. Wiesbaur informs me that the German botanists refer to this hybrid both *V. permixta* Jord. and *V. sepincola* Jord. There seems to be no doubt that this is correct so far as the first-named plant is concerned. Prof. Wiesbaur, however, mentions that he has seen French specimens, freely fruiting, named *V. sepincola* Jord. I possess similar specimens which are certainly not referable to this hybrid, and seem probably only varietally distinct from *V. odorata*. Mr. H. C. Watson's Ealing plant, about which a good deal was written some time since, is, I think, the same as this French *sepincola*. I have seen no other British specimens which I should refer to this form; the Merstham plant distributed by me some years ago as "*sepincola*" was wrongly named, and is merely a dark-flowered form of *V. odorata* × *hirta*.

V. HIRTA L. — As indicated above, this is a very variable species in Britain. Taking the *English Botany* plate as representing our type, with a nearly concolorous flower, we find a striking deviation in some of our Surrey plants; in the form referred to, the flower has a very large white eye, while the stipules seem to be a good deal more hispid. I am not yet satisfied, however, that these two characters are always co-existent; should they prove to be so, the plant will deserve a varietal name.

Var. *calcarea* Bab.—Judging by the plants cultivated by Watson and myself, this form does not revert to the type. I believe it to be a variety, and not a mere state due to situation.

Var. *glabrata* mihi.—I propose this name to represent the plant found by the late Rev. W. W. Newbould, and named by him, "*V. hirta, foliis oblongis, capsula glabra*," and referred to in Bab. Man. as "*V. sciaphila* Koch?" After searching in vain for *V. sciaphila* at Horlton, I applied to Prof. Babington, who very generously lent me the only existing specimens of Mr. Newbould's plant. I saw at once that it was not *V. sciaphila* Koch, and that it differed from ordinary *V. hirta* only in its totally glabrous capsule, an opinion in which I understand Prof. Babington now to concur. I have not seen this form from any other locality, though we have one in Surrey which comes very near it. In the Surrey form the capsule is glabrous, with the exception of a hairy zone round the base of the style. I may mention that in *V. sciaphila* Koch the leaves are shaped almost exactly as in *V. mirabilis*, so that it cannot very well be mistaken for any form of *V. hirta*.

I am indebted to Mr. F. J. Hanbury for lending me the Violets contained in Syme's herbarium. They include a remarkable form of *V. hirta* from Gosford Links, Haddington; this, and the Rev. H. E. Fox's plant from sand-hills, Northumberland, probably deserve cultivation and careful study.

# SOUTH WILTSHIRE MOSSES.

By James Saunders.

The following brief list of Mosses is issued with the hope that it is preliminary to a comparatively exhaustive account of the Moss Flora of Wiltshire, which is doubtless worthy the consideration of the naturalists of the district. The specimens on which it is based were gathered during a brief visit to Salisbury between the 5th and 10th of August, 1891, with the exception of those collected subsequently by Mr. E. J. Tatum, as indicated by his initials. The portion that was most carefully worked was Alderbury Common, which contains a rich and interesting series both of flowering plants and mosses. The general aspect of the flora of this Common is strikingly similar to that of the New Forest, of which it originally formed a part, the northern limit of the Forest extending as far as Harnham Bridge, which is immediately within the southern precincts of Salisbury. There are doubtless many ubiquitous species that could be easily detected in the immediate vicinity of Salisbury, but the list here appended is of those only of which voucher specimens have been collected. A suite of type specimens is being prepared for the Salisbury and South Wilts Museum, and duplicates of the Bog Mosses for the British Museum. It is my pleasing duty to express my obligation to Mr. Boswell, of Oxford, for his help in naming the critical forms; also to Mr. Blackmore, of Salisbury, and to Mr. Tatum, for their assistance.

*Sphagnum acutifolium* Ehrh. var. *rubellum*. Alderbury Common. — *S. fimbriatum* Wils. Alderbury Canal. — *S. squarrosum* Pers. Alderbury Canal. — *S. intermedium* Hoffm. Alderbury Common. — *S. subsecundum* Nees. Hamptworth, *E. J. T.* Alderbury. — *S. cymbifolium* Ehrh. Hamptworth, *E. J. T.* Alderbury.—Var. *congestum* Schpr. Alderbury Common.

*Dicranella heteromalla* Hedw.

*Dicranum scoparium* L. — *D. palustre* Bry. Brit. Alderbury Common.

*Leucobryum glaucum* L. Alderbury Common.

*Phascum rectum* Sm. Old Sarum, *E. J. T.*

*Pottia lanceolata* Dicks. Old Sarum, *E. J. T.*

*Didymodon rubellum* B. & S. Harnham Hill.

*Ditrichum flexicaule* Schwaeg. var. *densum*. Alderbury Common.

*Tortula muralis* L.—*T. fallax* Hedw. Hamptworth, *E. J. T.*

*Grimmia apocarpa* L. Netheravon, *E. J. T.*

*Bryum argenteum* L.

*Mnium undulatum* Hedw.—*M. rostratum* Schrad.—*M. hornum* L.

*Aulacomnium palustre* Bry. Brit. Alderbury.

*Atrichum undulatum* L.

*Pogonatum nanum* Neck. Hamptworth, *E. J. T.* — *P. aloides* Hedw. Redlynch, *E. J. T.*

*Polytrichum formosum* Hedw.—*P. commune* L. Alderbury.

*Fontinalis antipyretica* L.

*Leucodon sciuroides* Schwaeg.
*Neckera complanata* L. *E. J. T.*
*Homalia trichomanoides* Schreb. Netherhampton, *E. J. T.*
*Anomodon viticulosus* L. *E. J. T.*
*Thuidium tamariscinum* Hedw. West Harnham.
*Homalothecium sericeum* L.
*Camptothecium lutescens* Huds. Old Sarum, West Harnham.
*Brachythecium albicans* Neck.—*B. rutabulum* L.
*Eurhynchium striatum* Schreb. *E. J. T.* — *E. prælongum* Dill. *E. J. T.*
*Rhynchostegium confertum* Dicks. *E. J. T.*—*R. ruscifolium* Neck.
*Plagiothecium denticulatum* L.
*Amblystegium riparium* L. Downton, *E. J. T.*
*Hypnum aduncum* Hedw. Alderbury, West Harnham.—*H. fluitans* L. Alderbury. — *H. cupressiforme* L. var. *filiforme* Bry. Eur. On trees, Old Sarum.—*H. resupinatum* Wils.—*H. molluscum* Hedw. *E. J. T.* — *H. ochraceum* Turn. Alderbury Common. "A small form, with much the aspect of *Hypnum imponens*," H. Boswell, *in litt.* — *H. stellatum* Schreb. Alderbury. — *H. Schreberi* Ehrh. Hamptworth, *E. J. T.*—*H. purum* L.
*Hylocomium splendens* Dill.—*H. squarrosum* L.—*H. triquetrum* L.

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## A NEW *RUBUS*.

By the Rev. W. R. Linton.

**Rubus durescens**, n. sp.—Stem arcuate, five-angled, its sides flat or slightly furrowed in the upper part, glabrous or with a few scattered hairs, purple and dark brown, smooth, shining. Prickles, on the angles, slender, declining, about twice the length of their compressed bases. Leaves partially persistent, quinate-pedate, thick, hard, close-textured, dull, dark brownish green; upper surface moderately plicate and rugose, glabrous; under surface hard, with prominent veins, dull yellowish green, with scanty short stiff pubescence on the veins; midrib prickly; teeth mostly medium-sized, shallow, a few larger, with their tips recurved. Leaflets oblong-ovate, pointed, with subcordate base, the terminal occasionally cordate-acuminate, often imbricate. Petioles pubescent and prickly. Stipules linear-lanceolate, ciliate, glabrous on the surface, erect-patent. Panicle rather short, ovate, compact, broad in the upper part, with a few patent or subpatent corymbose axillary branches, mostly exceeded by their leaves, and a broad and somewhat compressed ultra-axillary top, the branches of the upper part often closely placed and parallel, patent and even divaricate with interlacing inflorescence, the terminal pedicel quite short, and exceeded by the uppermost side branches. Leaves ternate, excepting the upper leaf of the axillary part, which is simple; leaflets narrower than those of the barren stem, oblong-ovate with a point, often lobate in their upper part, with subcordate base. Rachis

slightly wavy or very nearly straight, red, glabrous below, pubescent and tomentose at the top. Prickles few, slender. Petals obovate, with cuneate base, not contiguous, light pink. Stamens pink, longer than and arching over the green styles. Sepals broad-ovate, with a linear point, greenish white-felted, whiter within, loosely reflexed after flowering. Carpels many, small, crowded, glabrous. Flowers in August.

It forms a bush two to four feet high. It is in some respects near to *R. calvatus* Blox., but differs in the character of the foliage, and still more in the panicle. It occurs in plenty over an area of some five miles by four to the north and east of Shirley, which is as far as I have traced it. I have seen a form of it near Mansell Park Farm, near Hulland, which has a narrower panicle, leafy to the top. My brother (in *B. E. C. Report*, 1890, p. 285) suggested that the Bradley Wood plant, which at one time was thought by Dr. W. O. Focke to be *R. septorum* F. J. Müll., and which Professor Babington put to *R. obscurifrons* M. & W., is a form of this; and I consider it to be so, as it is very close to it in every point. I have had this bramble under observation for three seasons, and also have young plants of it in cultivation which have grown from seed, and the definite and permanent character which it is found to possess appears to justify its publication as a species. I should also add that it has been submitted to Dr. W. O. Focke, who suggested the possibility of its being a form of *R. umbrosus* Auct. Brit., and, later on, of *R. incurvatus* Bab., but was unable to match it with any of the species known to him. Other suggested affinities are *R. nitidus* W. & N., by my brother and Rev. W. M. Rogers; and *R. hamulosus* P. J. Müll., by Prof. Babington, in *B. E. C. Report* for 1890, p. 285.

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# SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Continued from Journ. Bot., 1891, p. 366.)

Subtribus 3. Sideæ. Carpella simplici serie verticillata. Ovula solitaria pendula.

XI. PLAGIANTHUS Forst. Char. Gen. p. 85, t. 43.— Bracteolæ 0 v. a calyce distantes. Styli rami intus longitudinaliter stigmatosi.

Sect. I. Plagianthus Benth. Fl. Austral. i. p. 188. — Calyx campanulatus non angulatus. Arbores vel fruticosæ. Folia herbacea.

* Australienses.

1. P. sidoides Hook. Bot. Mag. t. 3396; Benth. Fl. Austral. i. p. 188, cum syn. *P. discolor* Asch. in Append. Ind. Sem. Hort. Berol. 1861, p. 10.

Hab. Australia. Tasmania!

2. P. PULCHELLUS A. Gray, Bot. Amer. Explor. Exp. i. p. 181; Benth. Fl. Austral. i. p. 189, cum syn.

Hab. Australia. N. S. Wales! Victoria! Tasmania!

Var. TOMENTOSUS Benth. *l. c.*

Hab. Victoria! Tasmania!

** Novæ Zelandiæ.

— Flores solitarii.

3. P. DIVARICATUS Forst.; Hook. f. Fl. Nov. Zeland. i. p. 29; Bot. Mag. t. 3271; Handb. N. Z. Fl. p. 30.

Hab. New Zealand!

— — Paniculi multiflori.

4. P. BETULINUS A. Cunn.; Hook. f. Fl. Nov. Zeland. i. p. 29; Handb. N. Z. Fl. p. 30. *Philippodendron regium* Poit. in Ann. Sc. Nat. ser. ii. p. 8, t. 3.

Hab. New Zealand!

Sect. II. LAWRENCIA Benth. Fl. Austral. i. p. 189.— Calyx angulatus. Herbæ vel putices tortuosæ. Folia crassa parva glabriuscula vel furfuracea.

5. P. SPICATUS Benth. in Journ. Linn. Soc. vi. p. 103; Fl. Austral. i. p. 189, cum syn.

Hab. Australia. Victoria. Tasmania! S.W. Australia!

Var. PUBESCENS Benth. *l. c.*

Hab. Victoria. S. Australia. N. S. Wales.

6. P. GLOMERATUS Benth. in Journ. Linn. Soc. vi. p. 103; Fl. Austral. i. p. 190. *Lawrencia glomerata* Hook. Ic. Pl. t. 417.

Hab. South! & West Australia! Queensland.

7. P. DIFFUSUS Benth. Fl. Austral. i. p. 190.

Hab. West Australia!

8. P. BERTHÆ F. Muell. Fragm. Phyt. Austral. v. p. 103.

Hab. Australia. Gardner's River!

9. P. MICROPHYLLUS F. Muell. Fragm. i. p. 29; Benth. Fl. Austral. i. p. 190. *Halothamnus microphyllus* F. Muell. Pl. Vict. i. p. 159. *P. squamatus* Benth. in Journ. Linn. Soc. vi. p. 103. *Lawrencia squamata* Nees in Pl. Preiss. i. p. 242.

Hab. Australia. Victoria! North, South! & West Australia!

10. **P. densiflorus**, n. sp. — Caule herbaceo ramoso, foliis crassis luteo-viridis parce stellato-pubescentibus basi cuneatis dentatis vel lobatis petiolatis, floribus parvis in spicas denses aggregatis dioicis vel subdioicis, fl. ♀, calyce angulato sepalis triangularibus pubescentibus, petalis albis calyce duplo longioribus, stylis filiformibus exsertis, carpellis 3.

Hab. N.W. Australia. Nichol Bay and De Grey River, Ridley Expedition. Herb. Kew!

Stem 2 ft. or more; upper leaves, lamina $\frac{1}{2}$ in. long, petiole $\frac{1}{2}$–$\frac{3}{4}$ in.; sepals $\frac{1}{16}$ in.; petals $\frac{1}{8}$ in.

*Species exclusæ.*

*P. humilis* Blanco, Fl. Filip. ed. 1, p. 526 = *Turræa pumila* Benn.
*P. Lyallii* Hook. f. Handb. N. Z. Fl. p. 30 = *Gaya Lyallii.*

*Non satis nota.*

*P. linariifolia* J. Buchanan in Trans. N. Z. Inst. xvi. p. 394.

XII. HOHERIA A. Cunn. in Ann. Nat. Hist. ser. 1, iii. p. 319. —Bracteolæ 0. Carpella dorso ala simplici verticali cristata. Styli rami apice truncato-vel capitellato-stigmatosi.

1. H. POPULNEA A. Cunn.; Hook. Ic. Pl. t. 565, 566; Handb. New Zeal. Fl. p. 31.

Hab. New Zealand.

Var. *α.* VULGARIS Hook. f. Handb. New Zeal. Fl. p. 31.

Var. *β.* LANCEOLATA Hook. f. *l. c.*

Var. *γ.* ANGUSTIFOLIA Hook. f. *l. c.* = *H. angustifolia* Raoul, Choix, p. 48, t. 26.

Var. *δ.* CRATEGIFOLIA Hook. f. *l. c.*

2. H. SINCLAIRII Hook. f. Handb. New Zeal. Fl. p. 31.
Hab. New Zealand. North Island, *Dr. Sinclair*!

*Species exclusa.*

*Hoheria Lyallii* Fl. N. Z. i. p. 31, t. 11 = *Gaya Lyallii*..

XIII. ANODA Cav. Diss. p. 38, t. 10, f. 3.—Bracteolæ 0. Carpella late stellata, erostria vel rostrata, lateribus septo evanido apertis. Styli rami apice truncato-vel capitellato-stigmatosi.

Sect. I. EUANODA A. Gray in Proc. Am. Acad. xxii. p. 297.—Stamina inclusa. Carpella 8–20 depressa. Fructus radiatiformis superne hispidissimus vel hirsutus. Semina plus minusve librata.

* Petala violacea vel purpurea raro alba.

1. A. HASTATA Cav.!; DC. Prod. i. p. 458; Schlecht. in Linnæa, x. p. 214; A. Gray in Proc. Am. Acad. xxii. p. 298. *A. Dilleniana* Cav.! & *A. triloba* Cav.!; DC. Prod. i. p. 458. *A. cristata* Schlecht. in Linnæa, xi. p. 210. *A. triangularis* DC. Prod. i. p. 459. *A. Fernandeziana* Steud. in Flora, 1856, p. 437. *A. brachyantha* Rchb. Ic. Bot. Exot. t. 34. *A. populifolia* Phil. in Linnæa, xxviii. p. 613. *Sida cristata* L. Sp. Pl. ed. 1, 685. *S. Dilleniana* Willd. Sp. iii. p. 764. *S. hastata* Willd. *l. c.* p. 763. *S. triangularis* Willd. Enum. Pl. Hort. Berol. p. 725. *S. centrota* Spr. Syst. Veg. iv. 2, p. 259. *S. Zuccagnii* Spr. *l. c.* iii. p. 121. *S. acerifolia* Zucc. Cent. Obs. n. 80, non DC.

Hab. America. Southern United States to the Argentine Republic and Chili!

2. A. ACERIFOLIA DC. Prod. i. p. 459. *Sida hastata* Sims, Bot. Mag. t. 1541. *S. deltoidea* Horn. Hort. Haf. p. 650. *A. hastata* A. Rich. Fl. Cub. p. 419.

Hab. Mexico! Venezuela. Cuba.

3. A. PUBESCENS Schlecht. in Linnæa, xi. p. 218.
Hab. Mexico!

4. A. ARIZONICA A. Gray in Proc. Am. Acad. xxii. p. 298.
Hab. S. Arizona, *Lemmon*, No. 599.

Var. DIGITATA A. Gray, *l. c.*
Hab. S. Arizona.

** Petala flava.

5. A. LANCEOLATA Hook. & Arn. Bot. Beechey, p. 411.
Hab. Mexico!

6. A. WRIGHTII A. Gray, Pl. Wright, ii. p. 22.
Hab. New Mexico, *Wright*! Mexico, *Schaffner*.

Sect. 2. SIDANODA A. Gray in Proc. Am. Acad. xxii. p. 299.—Stamina inclusa. Carpella 5–10 erecta vel subdepressa. Fructus pulverulentus sine endocarpio tegmine. Semina plus minusve suspensa.

* Petala cœrulea vel albo-cœrulea.

7. A. THURBERI A. Gray in Proc. Am. Acad. xxii. p. 299. *A. hastata* var. *depauperata* A. Gray, Pl. Wright. ii. p. 23.
Hab. S. Arizona, Mexico.

** Petala flava.

8. A. PENTACHISTA A. Gray, Pl. Wright. ii. p. 22.
Hab. S. Arizona to Texas, N. Mexico! Mexico.

9. A. ABUTILOIDES A Gray in Proc. Am. Acad. xxii. p. 300.
Hab. S. Arizona, *Pringle*.

Sect. 3. CLEISTANODA A. Gray in Proc. Am. Acad. xxii. p. 900.—Stamina inclusa. Carpella 5–10. Semen tegmine firmo demum clathrato omnino obtectum.

* Petala flava vel alba.

10. A. CRENATIFLORA Ort. Dec. p. 96. *A. parviflora* Cav.!; DC. Prod. i. p. 459; Rchb. Ic. Bot. Exot. t. 44.
Hab. Mexico!

** Petala cœrulea.

11. A. RETICULATA S. Wats. in Proc. Am. Acad. xvii. p. 368.
Hab. Arizona.

Sect. 4. PERIPTERA K. Schumann in Fl. Brazil. Fasc. cix. p. 357. Stamina exserta. Carpella 10–12.

Petala incarnata.

12. A. PUNICEA Lag. Nov. Gen. p. 21. *A. incarnata* H. B. K. Nov. Gen. Am. v. p. 266. *Periptera punicea* DC. Prod. i. p. 459. *Sida periptera* Sims, Bot. Mag. t. 1644. *S. malvaviscus* Fl. Mex. Ic. ined. *S. rubra* Ten. Cat. Hort. Neap. 1813, p. 96.
Hab. Mexico!

Sect. 5. PSEUDOSIDA. — Stamina inclusa. Carpella circiter 8 trigona dorso bicorniculata. Semen munitum viridi exocarpio et demum imperfecte nudum.

Petala flava.

13. A. DENUDATA K. Schumann in Fl. Brazil, Fasc. cix. p. 357. t. lxv. *Sida denudata* Nees et Mart.; DC. Prod. i. p. 467.

Hab. Brazil. Paraguay.

*Species exclusa.*—*Anoda Ochsenii* Phil. = *Abutilon Ochsenii* Phil.

*Non satis nota.*—*Anoda? strictiflora* Steud. in Flora, 1856, p. 437.

XIV. CRISTARIA Cav. Ic. v. p. 10, 418. Bracteolæ 0. Carpella superne in alas geminas ad axin conniventes producta. Styli rami apice truncato- vel capitellato-stigmatosi.

* Folia pinnatisecta vel pinnatifida interdum fere palmatisecta vel lobata.

† Folia pannosa vel subpannosa.

1. C. GLAUCOPHYLLA Cav.; DC. Prod. i. p. 458; C. Gay, Fl. Chile, i. p. 316.

Hab. Chili. Central Provinces!

2. C. TRICHOCAULA Phil. in Anales. Univ. Chil. 1872, p. 682.

Hab. Chili. Coquimbo!

3. C. URMENETÆ Phil. *l. c.* p. 681.

Hab. Chili. Huasco! Coquimbo!

†† Folia viridia plus minusve pubescentia vel glabra.

4. C. ERIANTHA Hook. & Arn. in Bot. Misc. iii. p. 152. *C. grandiflora* Turcz. in Bull. Soc. Mosc. 1863, p. 564.

Hab. Chili. Valparaiso! Coquimbo! Peru.

5. C. MULTIFIDA Cav.; DC. Prod. i. p. 458; C. Gay, Fl. Chili, i. p. 152; *C. obtusiloba* Turcz. in Bull. Soc. Mosc. 1863, p. 564. *Sida multifida* Cav. Diss. i. p. 25, t. 4, f. 2. *S. pterygosperma* L'Herit. Stirp. i. p. 119, t. 57.

Hab. Chili. Coquimbo! Peru!

6. C. ARGYLIÆFOLIA Phil. in Linnæa, xxxiii. p. 29.

Hab. Chili. Copiapo.

7. C. INTERMEDIA C. Gay, Fl. Chile, i. p. 319.

Hab. Chili. Coquimbo.

8. C. ASPERA C. Gay, Fl. Chile, i. p. 320.

Hab. Chili. Coquimbo! Atacama!

9. C. PINNATIFIDA Hook. & Arn. Bot. Beechey Voy. i. p. 12.

Hab. Chili. Coquimbo.

10. C. VIRGATA C. Gay, Fl. Chile, i. p. 322.

Hab. Chili. Central Provinces.

11. C. OVALLEA C. Gay, Fl. Chile, i. p. 320.

Hab. Chili. Coquimbo. Atacama.

† † Folia subcrassa luteo-viridia.

†

12. C. VIRIDILUTEOLA C. Gay, Fl. Chile, i. p. 322.
Hab. Chili. Atacama! Caldera!

13. C. SESSILIFOLIA Turcz. in Bull. Soc. Mosc. 1858, i. p. 197.
Hab. Chili. Conception, *Bridges* No. 1311!

14. C. GERANIIFOLIA Presl, Reliq. Haenk. ii. p. 119.
Hab. Chili. Northern Provinces!

15. C. PINNATA Phil. in Anales Univ. Chil. 1872, p. 682.
Hab. Chili.

16. C. LOBULATA Phil. Fl. Atacam. p. 11.
Hab. Chili. Atacama.

† † Folia dense stellato-pubescentia.

† †

17. C. BIPINNATA Phil. in Linnæa, xxxiii. p. 29.
Hab. Chili. Copiapo.

* * Folia palmatipartita vel secta.

18. C. MULTIFLORA C. Gay, Fl. Chile, i. p. 321.
Hab. Chili. Coquimbo!

19. C. DISSECTA Hook. & Arn. in Bot. Misc. iii. p. 153. *C. hispida* Poepp. in Herb. Mus. Brit.
Hab. Chili. Cordilleras!

20. C. LATA Turcz. in Bull. Soc. Mosc. 1863, p. 565.
Hab. Chili. Conception, *Bridges*, No. 1307!

21. C. HIRSUTA Presl, Reliq. Haenk. ii. p. 119.
Hab. Chili.

22. C. ECRISTATA A. Gray, Wilkes Explor. Exp. i. p. 165.
Hab. Patagonia. Rio Negro.

23. C. CONCINNA Phil. Fl. Atacam. p. 11.
Hab. Chili. Paposo.

24. C. LOASÆFOLIA Phil. in Anales Univ. Chil. 1862, ii. p. 392.
Hab. Chili. Mendoza.

25. C. SADÆ Phil. in Linnæa, xxxiii. p. 30.
Hab. Chili. Copiapo.

26. C. GLANDULOSA Phil. in Linnæa, xxxiii. p. 31.
Hab. Chili. Coquimbo.

27. **C. cyanea** Phil. in Herb. Mus. Brit. ined. — Caule erecto ramoso folioso, foliis petiolatis 3–5 palmatisectis vel profunde palmatilobatis luteo-viridibus segmentis irregulariter pinnatilobatis vel serratis minute molliter pubescentibus lobis subacutis, floribus paniculatis, sepalis triangularibus subacuminatis, petalis cæruleis calyce duplo vel triplo longioribus, carpellis circiter 15 carinatis, marginibus acutis alis carpellorum glabris carpellum superantibus.

Hab. Chili. Yerbabuena, *F. Philippi & Borchers*, 1885!

Stem 1 ft.?; leaves, lamina 1–1½ in. long, petiole 1–2 in.; sepals nearly ¼ in.; petals ⅜ in.

28. **C. saniculæfolia** Phil. in Herb. Mus. Brit. ined.—Caulibus erectis, foliis petiolatis cinereis viscosis stellato-pubescentibus palmatilobatis segmentis pinnatilobatis vel serratis, floribus parvis racemosis, sepalis ovatis acuminatis cinereis, petalis cæruleis calyce duplo longioribus, carpellis circiter 12 marginibus acutis alis carpellorum glabris carpellum superantibus.

Hab. Chili. Chanarullo, *F. Philippi & Borchers*, 1885!

Stems 6–8 in.; leaves, lamina $\frac{1}{2}$ in., petiole $1\frac{1}{2}$ in.; sepals $\frac{1}{8}$ in.; petals $\frac{1}{8}$ in.

29. C. GRACILIS C. Gay, Fl. Chile, i. p. 326.

Hab. Chili. Copiapo.

30. C. ELEGANS C. Gay, Fl. Chile, i. p. 325.

Hab. Chili. Copiapo.

31. C. HETEROPHYLLA Hook. & Arn. in Bot. Misc. iii. p. 153. *Sida heterophylla* Cav.; DC. Prod. i. p. 465.

Hab. Chili. Atacama; Argentine Republic. Mendoza!

32. **C. divaricata** Phil. in Herb. Mus. Brit. ined.—Caule erecto ramoso folioso, foliis petiolatis 3–5-palmatilobatis segmentis irregulariter serratis vel lobatis minute stellato-pubescentia foliis supremis trisectis segmentis angusto-oblongis acutis, floribus laxe paniculatis, sepalis triangularibus acuminatis pubescentibus, petalis cæruleis calyce duplo longioribus, carpellis ignotis.

Hab. Chili. Piedracolgada, *F. Philippi & Borchers*, 1885; Carrizal!

Stem 1 ft. ?; leaves $\frac{1}{2}$–1 in. long; sepals $\frac{1}{8}$ in.; petals $\frac{1}{6}$ in.

** Folia integra vel dentata vel crenata vel parce lobata pannosa.

33. C. BETONICÆFOLIA Pers.; DC. Prod. i. p. 458.

Hab. Chili. Valparaiso!

34. C. ANDICOLA C. Gay, Fl. Chile, i. p. 317.

Hab. Chili. Coquimbo! Atacama!

35. C. INTEGERRIMA Phil. Fl. Atacam. p. 11.

Hab. Chili. Taltal.

*** Folia pannosa utrinque argenteo-tomentoso-villosa.

36. C. CORDATO-ROTUNDIFOLIA C. Gay, Fl. Chile, i. p. 328.

Hab. Chili. Coquimbo!

*** Folia ovata subcordata dentata viridia parce stellato-villosa.

37. C. SPINOLÆ C. Gay, Fl. Chile, i. p. 327.

Hab. Chili. Copiapo.

38. C. FOLIOSA Phil. Fl. Atacam. p. 11.

Hab. Chili. Atacama.

*** Folia parce lobata viridia glabra vel fere glabra.

39. **C. grandidentata** Phil. in Herb. Mus. Brit. ined.—Caule erecto crasso piloso, foliis petiolatis viridibus cordato-ovatis irregulariter lobatis parce pilosis, floribus solitariis axillaribus pedunculo petiolo duplo longiore, sepalis lanceolatis acutis pilosis, petalis cæruleis calyce duplo longioribus, aliis carpellorum carpellum superantibus.

Hab. Chili. Carrizalbayo, *F. Philippi & Borchers*, 1885!
Stem $\frac{1}{2}$–2 ft.; leaves 1–$1\frac{1}{2}$ in.; sepals $\frac{1}{3}$ in.; petals $\frac{3}{4}$ in.

40. C. Molinæ Gay, Fl. Chile, i. p. 326.
Hab. Chili. Northern Provinces!

41. **C. ranunculifolia** Phil. in Herb. Mus. Brit. ined.—Caule erecto ramoso folioso, foliis petiolatis luteo-viridis palmatilobatis vel serratis basi cordatis minute pubescentibus, floribus paniculatis parvis, sepalis triangularibus acutis, petalis cæruleis calyce duplo longioribus, carpellis ignotis.
Hab. Chili. Atacama, *F. Philippi & Borchers*, 1885!
Stem 1–$1\frac{1}{2}$ ft.; leaves 1 in. long; sepals $\frac{1}{8}$ in.; petals $\frac{1}{5}$ in.

*Species exclusa.*

*C. coccinea* Pursh. = *Malvastrum coccineum* A. Gray.

*Non satis notæ.*

*C. diversifolia* Ph. in Anales Univ. Chil. 1870, ii. p. 165.
*C. Haenkeana* Presl, Reliq. Haenk. ii. p. 120.
*C. insularis* F. Ph. in Anales Univ. Chil. 1875, p. 187.
*C. patagonica* Phil. in Linnæa, xxxiii. p. 28.
*C. pauciflora* Poepp. in Hb. Mus. Brit.; material insufficient for determination.

(To be continued.)

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## ON *EPILOBIUM DURIÆI* J. Gay.

By C. B. Clarke, F.R.S.

Mr. Marshall has observed upon my note on this plant in *Journ. Bot.* 1891, pp. 225–228, t. 307. Mr. Marshall identifies my English specimens as *E. montanum* Linn., forma *minor aprica* Hausskn., to which I have no objection; but he proceeds to say that *E. Duriæi* J. Gay is an altogether different plant; and on p. 297 he gives the five points of difference on which he relies, as together amounting to a specific difference.

I should not attempt to encumber your pages further if the point at issue was merely whether a plant considered by one botanist a species was in the eyes of another a var. It is quite possible that Haussknecht or Marshall could sort successfully specimens of *E. Duriæi* of the South of France from specimens of *E. montanum*, forma *aprica*, of the South of England. So in many cases Mr. Baker can separate his "north-country form" from my Hampshire examples of what is universally called the same species.

But Mr. Marshall appears to me not to have realised the strength of the case I originally put together. I show that the characters relied on by Haussknecht and his ordering of the forms differ from those adopted by Nyman and other high authorities; I show that the differences in the seeds, on which Haussknecht

mainly relies, are much too small to separate these forms; I also state that so very close is *E. Duriæi* to some of the allied "species" that Haussknecht himself has wrongly altered the name of an example of *E. Duriæi* in Herb. Kew. This last is a very strong fact, and I understand Mr. Marshall to admit it (or pass it by unchallenged); I do not mean that it shows that Haussknecht does not know the species admirably well, but it shows how exceedingly critical they are.

As to the five criterions given by Mr. Marshall to separate *E. montanum* var. *aprica* from *E. Duriæi*, the first four I should esteem of no specific value if I could see them; but I am unable to see them on the specimens. For instance, Mr. Marshall says that the "stem is always simple in *E. Duriæi*," and that "Barbey's fine plate hits off the average *E. Duriæi* remarkably well." But Barbey's plate shows *two* lateral branches to the stem, *as does the original type specimen (right-hand) of J. Gay*. I attribute, however, no importance to such characters. The fifth criterion given by Mr. Marshall is the most important, as Mr. Marshall truly says, "The stolons are entirely like those of *E. alsinefolium*, as is exceedingly well illustrated by Barbey." This is a most extraordinary statement to me; the plant of *E. Duriæi* figured by Barbey is stouter than in J. Gay's type specimens (I thought it might have been an artist's enlargement of the larger, but I believe now that Mr. Marshall is right in thinking it not taken from the type pieces collected by Durieu). As to the stolons in Barbey's figure, they are rather stouter than "the *montanum* states represented by Mr. N. E. Brown in t. 307." In my opinion, they are not so near the stolons of *E. alsinefolium* as are the stolons of my *E. montanum* var. *aprica*, which agree exactly with those of *E. Duriæi*, as t. 307 shows. It may safely be affirmed that the difference between the stolons of *E. montanum* var. *aprica* and those of *E. Duriæi* is not one-hundredth the difference between the stolons of *E. montanum* var. *aprica* and the "rosettes" of *E. montanum* type.

Mr. Marshall says that I "made a slip in speaking of the remarkably persistent kataphylloid leaves from the preceding year." I do not quite understand this, because, in correcting me, Mr. Marshall states exactly what I meant; he says, "The new flowering stems are produced from stolons or rosettes which have outlived the winter." Exactly so; the stolons are an elongate form of the rosette, the kataphylloid leaves homologous to its scales; in "typical" *E. montanum* in flower in July, no traces of the rosette remain, unless by rare accident; in *E. montanum* var. *aprica* (after digging some hundred specimens, I would say), they are always, unless by accident, present. J. Gay made a prominent point (in his diagnosis of *E. Duriæi*) of the permanence of these kataphylloid leaves; Mr. Marshall appears to admit the fact of the agreement of *E. montanum* var. *aprica* with *E. Duriæi* in this main diagnostic point; I do not see that he weakens the significance of the fact by raising a question whether the kataphylloid leaves are of the same year or of the preceding year.

Mr. Marshall then complains of my "tone in speaking of

Haussknecht's book." I am not disposed to disparage monographers, and I had the pleasure of meeting Haussknecht here when he was working through the Kew Epilobiums; I have the greatest respect for him botanically, and for his deep knowledge of *Epilobium;* but I am not disposed to spare his book. It bestows quarto pages of descriptions upon hybrids between *E. montanum*, *collinum*, *Duriæi*, &c., when it appears difficult, even for himself, to sort these species themselves apart; and when there is no evidence whatever adduced to show that the plants in question are hybrids —far less what their parents were.

I have not, as Mr. Marshall suggests, dismissed hybrids offhand; where I have had time to come to close quarters with them, however, they have invariably broken down. They largely arise in the following way:—The species (A) is diagnosed as having hairy leaves, acute sepals, and the closely allied species (B) as having glabrous leaves, obtuse sepals. Some hybrid-monger gets an example that has glabrous leaves, but acute sepals, and at once describes the new "hybrid." There is of course the obvious probability that (A) and (B) themselves are only the ends of a series—that the two species "sensim transeunt" into each other, and that there is no hybridity in the matter. But there is another case which I meet with; the text-book diagnoses (A) and (B) as above by "obvious" and usually sufficient characters; but it often happens that (A), though much resembling (B), may be found on more careful examination to differ from (B) by many other and more essential, though less patent, characters; and it may turn out that the supposed hybrid between (A) and (B) is altogether (A), *i. e.*, the acute sepals may carry with them several important (perhaps small) structural points, while the hairiness of the leaves in the species (A) may prove in a wide geographic series a variable, a trivial, or finally a merely racial local character. *Scirpus sylvaticus* Linn. has clustered spikelets, *S. radicans* Schkuhr has solitary spikelets; the favourite hybrid, *S. sylvatico-radicans* Baenitz!, has some spikelets pedicelled, some sessile clustered. But the species *S. sylvaticus* and *S. radicans* may be much more fully diagnosed, and I am satisfied that the supposed hybrid is an accidental form (not worth even mention, but should be covered by the diagnosis) of *S. sylvaticus*, and no hybrid whatever. The makers of hybrids often go no further than the diagnostic characters of systematists; their hybrids are not hybrids between any two plants that ever lived, either species, crosses, or individuals, but hybrids between two of the hybrid-monger's own diagnoses.

I would illustrate my views of species-making by a concrete case. Close round Andover are 3000 acres of "primeval forest" —an underwood of oak and hazel exclusively. There is one frequent form of hazel—var. *præcox* I will call it—that ripens its nut early; the nut is oblong, with a thin shell, much protruded from the involucre; the plant appears of thin foliage, perhaps mainly because the leaves wither early, and is at once recognised by its general aspect by the children who pick nuts. There is another form of nut, "var. *serotina*," which has short ovoid thick-shelled

nuts, covered closely by the husk, ripening late, with heavy foliage. It would be possible, I think, to form ten or twelve vars. of the order of "*præcox*" and "*serotina*," which would include $\frac{12}{20}$ of the nut stubs in the forest; possibly, if these varieties were judiciously diagnosed, $\frac{42}{50}$ of the nut-stubs could be fairly included; and the varieties, formed on such characters as I have indicated, would be at least as worthy attention as much of the *Epilobium*-work in Haussknecht's book. If I were by circumstances confined to local botanic work, I might think it worth while to put out an attempt to divide *Corylus Avellana* into varieties in this way, as these varieties have an economic value already known by the children who nut. I do not think I should do much harm, beyond starting new names to cumber indices for all time, if I chose to put out these vars. as species.

But I should find that the remaining $\frac{1}{20}$ or $\frac{1}{50}$ of the nut-stubs which could not fairly be included in my ten or twelve varieties as circumscribed would be more or less "intermediate" between the artificial characters I had assigned to my varieties. If I then proceeded to describe these intermediates *seriatim* as hybrids between my varieties, I believe I should be doing little more than playing a game of words, and should be following a course calculated to bring the science of systematic botany into contempt.

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## ISABELLA GIFFORD.

By the death of Miss Gifford, on the 26th of December, the last link of the chain of lady phycologists, which had extended over a period of more than a century, has been broken. The earliest of these active workers, to whom British phycologists are so much indebted, was Miss Hutchins, of Bantry, who died about 1816, and was commemorated by Brown in his genus *Hutchinsia*. Since then there has been a continuous band of ladies, principal among whom may be named Mrs. Griffiths (*Griffithsia*), Mrs. Gatty (*Gattya*), Miss Ball (*Ballia*), Miss Cutler (*Cutleria*), and Miss Warren; with others, such as Miss Poore, Miss Turner, Miss Watt, and Miss White, whose co-operation is acknowledged by Harvey and other writers. A new school of female workers is arising, from whom much may be expected, but the former list is closed by the death of Miss Gifford.

She was the only daughter of Major George St. John Gifford, one of a large family of brothers (all more or less distinguished), which included Theophilus Gifford, whose promising career was early cut short in an engagement in the Peninsular War, and whose gallant deeds have been recorded by Sir William Napier. Captain Gifford was with Sir John Moore at Corunna. When the war was over, he returned to England, and some time afterwards he married Isabella, youngest daughter of John Christie, Esq., of Wick House, Hackney, and of Glanusk, in the county of Brecon. For some time after his marriage Capt. Gifford lived in Wales, and acted as land agent to his father-in-law.

Isabella Gifford was born at Swansea about 1823. During her early life she resided with her parents in France, in Jersey, and at Falmouth (where her only brother died); they finally settled at Minehead about forty years ago. From both father and mother she inherited strong moral and intellectual powers. Mrs. Gifford was a rarely gifted and most cultured woman, and herself educated her daughter. But the scientific bent which very early in life Miss Gifford developed was quite her own,—she had no individual instruction or guidance in the pursuit which she followed most unweariedly throughout her life. She had full encouragement from her parents, but she was quite self-taught, Mrs. Gifford's mind being of a literary turn, with no admixture of the scientific.

The extremely simple mode of life which was characteristic of the family was very favourable to this lover of Nature, who studied and explored, and scrambled and botanised wherever her fancy led her in the neighbourhood of her home; from Blue Anchor Bay to Bossington Point, on the shore; and, inland, over the heights and in the valleys; or nearer home, where the woods and banks and hedges formed, for the most part, her "happy hunting ground." Although seaweeds were her favourite study, Miss Gifford had that general acquaintance with British plants which was more general among women of one or two generations back than it is in these days, when the knowledge of structure rather than of plants is more in vogue, and when the paths of botany are thickly spread with the thorns of Roses and Brambles. In 1855 she contributed to the *Proceedings of the Somersetshire Archæological and Natural History Society* (vi. 131–7) "Notices of the rare and most remarkable plants in the neighbourhood of Dunster, Blue Anchor, Minehead, &c." But, like all those whose names were mentioned in our first paragraph, with the exception of Mrs. Gatty, Miss Gifford was not well known as an author. Her only independent publication was *The Marine Botanist*, which appeared in 1848, and was apparently well received, as by 1853 it had reached a third edition, "greatly improved and enlarged"—a statement which evidently means more than it does in some cases, judging from a review of the first edition (which we have not seen) in the *Annals and Magazine of Natural History* for 1848, and from the author's preface to the third. The help afforded by Miss Gifford and other ladies to Harvey is acknowledged in the preface to his *Phycologia* (1851).

In 1853 she contributed 'Observations on the Marine Flora of Somerset' to the *Proceedings* already mentioned (iv. 117), which include critical notes upon *Nitophyllum*, *Ectocarpus*, and other genera. In 1858 she joined the Botanical Exchange Club, then established at Thirsk, of which she was an active contributing member, and her connection with it continued until 1871. Her only contribution to our pages was a short note on the tetraspores of *Seirospora Griffithsiana* (Journ. Bot. 1871, 113).

We have to thank Mr. E. M. Holmes for the following note:—"Twenty-five years ago I sent Miss Gifford a few seaweeds to name. I had just begun to collect, and she was, I think, my earliest correspondent on the subject. She was also interested in

mosses, and frequently sent me them to name for her. She found a few very rare ones at Minehead, such as *Pottia Wilsoni* and *Zygodon Forsteri*, the only other British localities for the latter being, I believe, Epping Forest, and some wood near Hastings, where Jenner found it. Subsequently I called on her at Minehead, and she took me to a field where she said she had found it, but could not tell the exact spot. I soon found it on the top of a decayed post behind the gate as we entered. She was much pleased when I pointed out to her *Epipterygium* (*Bryum*) *Tozeri*, and *Tortula cuneifolia* near by. The discovery of *Ectocarpus Holmesii* was really due to her. She found the plant on posts in the sea at Minehead, and sent it to me as *E. crinitus;* and it was only when I got a piece of the genuine *E. crinitus* many years after that I saw her plant was not *crinitus*. *Nitophyllum versicolor* was a species that I could only obtain for her. I never saw it growing myself, and for some years no one else of my acquaintance could send me *Grateloupia filicina*. The form of the latter at Minehead is the plant intermediate between *G. filicina* and *G. dichotoma*. Miss Gifford was an excellent correspondent, and had always some interesting facts to communicate concerning specimens collected or sent by herself."

Among her correspondents were Mr. H. Boswell, whom she frequently consulted about Mosses, and Dr. G. W. Traill. In 1890, Miss Gifford joined the Selborne Society. "I would have tried," she wrote, "to get a branch established here, did my health permit of it, but I must not undertake more duties than fall to my share, and which I can only most inadequately perform."

We are indebted to a cousin of Miss Gifford for many of the foregoing facts, as well as for the following note:—"Her life was singularly uneventful, so much so, that she would count as her 'field day' a long-ago scientific meeting at Dunster, where a paper of hers was read, and her collection of the plants of West Somerset exhibited. Rheumatism and neuralgia made her in her later life almost a prisoner to the immediate neighbourhood of her home; but though not able to go far afield, her conservatory and garden afforded her unfailing delight, while her large correspondence kept her also happily employed. Major Gifford died in 1869, and his widow and daughter lived on at Minehead, a very quiet life, but a most refreshing one to come in contact with, because of its unworldliness, and its large and genial sympathy. Influenza attacked the household before Christmas, and mother and daughter passed away within twenty-four hours of each other. They were laid to rest on New Year's Eve in the beautiful churchyard of Minehead, surrounded with hills and sky and sea; a fitting resting place for one who loved Nature so truly."

The only portrait of Miss Gifford is one in crayon, taken many years ago, which would not be suitable for reproduction. Mr. Holmes describes her as of medium height, with fair hair and complexion, and a delicate refined face.

# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 51.)

**Barbarea vulgaris** Br. in Ait. Hort. Kew. iv. 109 (1812). **1548.** "Groweth aboute Brokes and water sydes."—Turn. Names, H. i. back.

[B. ARCUATA Reichb. **1843.** "Llangollen, N. Wales, Mr. Borrer."—Bab. Man. ed. 1, p. 20. A doubtful record—not in last ed. of the Manual.]

**B. stricta** Andrz. in Bess. Enum. vol. 72 (1822). **1843.** "Between Sheffield and Halifax, and between Weedon and Blisworth, plentifully, Mr. Borrer."—Bab. Man. ed. 1, p. 20.

**B. intermedia** Boreau, Fl. du Centr. ed. 1, p. 48 (1840). **1849.** "Cultivated fields, Chorlton," &c., near Manchester.—Buxton, Manchester Flora (1849), p. 84.

**Arabis petræa** Lam. Dict. i. 219 (1783). **1641.** Found by Johnson on Snowdon, in August, 1639. (See Merc. Bot. pars alt. p. 8, and compare Ray, Syn. ii. 174.)

**A. stricta** Huds. ii. 292 (1778). **1686.** "Nuper in rupe S. Vincentii prope Bristolium in Anglia invenit D. Jac. Newton."—Ray, Hist. i. 817.

**A. ciliata** Br. in Ait. Hort. Kew. iv. 107 (1812). Connemara, Ireland.—J. T. Mackay, E. B. 1746. **1807.** "Gravelly beach by the sea-shore at Rynville [Renvyle], Cunnamara, in Oct. 1805."—J. T. Mackay, Flora Hibernica, 19 (1836).

**A. alpina** L. Sp. Pl. 664 (1753). **1887.** Cuchullin range, Skye.—H. C. Hart in Journ. Bot. 1887, 247.

**A. hirsuta** Scop. Fl. Carn. ed. 2, ii. 30 (1772). **1670.** "Upon the walls of the Church of Ashburn [Ashbourne] in the Peak."—Ray, Cat. 38. Ray (*l. c.*) suggests with much probability that this was the plant mistaken by Johnson (Merc. Bot. 26) for *C. bellidifolia*, and localised by him "on the rocks nigh the Quarrie by Bath." If so, the first record dates **1634.**

**A. perfoliata** Lam, Dict. i. 219 (1789). **1597.** "In the West part of Englande. . . . I have likewise seene it . . . at Pyms by a village called Edmonton neere London, by the citie wals of Westchester in the corne fieldes, and where flaxe did growe about Cambridge."—Ger. 213.

**Cardamine amara** L. Sp. Pl. 656 (1753). **1666.** "In a bog betwixt the Duke of Norfolks garden & Lambeth Church, in the way by Thames side, and in Cornwall."—Merrett, 20.

**C. pratensis** L. Sp. Pl. 656 (1753). **1597.** "In moist medowes . . . called at the Namptwich in Cheshire, where I had my beginning Ladie smockes."—Ger. 203.

**C. hirsuta** L. Sp. Pl. 655 (1753), (aggregate). **1670.** "Very common in ditches and moist places."—Ray, Cat. 54.

**C. hirsuta** L. (segregate). **1690.** According to Stokes (With.

Bot. Arr. ed. 2, 688), who first clearly separated *C. flexuosa*, this is the "*C. minor arvensis* D. Lhwyd, quam inter segetes & in hortis passim provenire ait, tum in agro Salopiensi prope Oswaldstry [Oswestry], tum Montis Gomerici [Montgomery] prope Lhanvylhin."—R. Syn. 114 (1690).

**C. flexuosa** With. Bot. Arr. ed. 3, iii. 578 (1796). Stokes identifies this with "*C. impatiens altera hirsutior*," which "is very common in Warwickshire, in gardens and moist places" (R. Syn. ii. 171. Stokes called this *C. parviflora*, a preoccupied name, for which *C. flexuosa* was substituted in ed. 3.

**C. impatiens** L. Sp. Pl. 655 (1753). **1634.** "I found it . . . in rills and ditch sides about Bath and in some other places."—Johnson, Merc. Bot. 26.

**C. bulbifera** Br. in Ait. Hort. Kew., iv. 102 (1812). **1640.** "At Mayfield, in Sussex, in a wood called Highreede."—Park. Theatr. 621.

**Draba muralis** L. Sp. Pl. 642 (1753). **1670.** "On the sides of the mountains in several places of Craven in Yorkshire."—Ray, Cat. 50.

**D. incana** L. Sp. Pl. 643 (1753). **1666.** "At Clapdale in Yorkshire in the mid way betwixt Setle & Ingleborough hill, on the rocks."—Merrett, 90. [? "*Paronychia major*, Park. pag. 556. Whitlow-wort. Plentifully in the North. Mr. Stonehouse."—How, Phyt. 88 (1650).]

**D. rupestris** Br. in Ait. Hort. Kew. iv. 91 (1812). **1790.** Found by James Dickson in 1789 on Ben Lawers.—Dicks. Crypt. Fasc. ii. 29, and Trans. Linn. Soc. ii. 288.

**D. aizoides** L. Mant. 91 (1767). **1804.** Found by John Lucas, in 1795, "near Wormshead, 16 miles west of Swansea"; and in 1803 by Dr. W. Turton, "on walls and rocks about Pennard Castle, 8 miles west of Swansea."—E. B. 1271, 1338.

**Erophila vulgaris** DC. Syst. ii. 356 (1821). **1597.** "Upon the bricke wall in Chancerie Lane belonging to the Earle of Southampton, in the suburbes of London."—Ger. 500.

**E. præcox** DC. Syst. ii. 357 (1821). **1857.** *Draba verna* c. *brachycarpa* Jord.—L. Cat. ed. 5, 79 c. "At Scawton . . . 8 miles east of Thirsk."—J. G. Baker in Phyt. ii. (N.S.) 502 (1858).

**E. inflata** Hook. f. **1830.** "On Ben Lawers, above the Lake."—Hook. Fl. Brit. ed. 1, 299.

**Cochlearia officinalis** L. Sp. Pl. 647 (1753). **1597.** "By the sea side at Hull, at Boston, and Lynn, and in many other places of Lincolneshire neere unto the sea."—Ger. 324.

**C. danica** L. Sp. Pl. 647 (1753). **1576.** "In Portlandiæ peninsula, Cornubiæ vicino portu Plimmouvve alijsq: maritimis Anglic. cantibus."—Lob. Stirp. Hist. p. 338.

**C. anglica** L. Sp. Pl. ed. 2, 903 (1762). **1570.** "In Anglia ad amænissimi Tamesis fluenta, quà Londinum præterlapsus est."—Lob. Adv. 122.

**C. Armoracia** L. Sp. Pl. 648 (1753). **1648.** "Groweth in Morpeth in Northumberland and there it is called Redco."—Turn. Names, G vi. (back).

(To be continued.)

## *SHORT NOTES.*

**Microchæte æruginea**, sp. n.—In the autumn of last year, whilst examining some specimens of *Rhodochorton Rothii* Näg. from Berwick-on-Tweed, I found what appears to be a new *Microchæte*, closely allied to *M. tenera*, with which it must be classed, but differing from it in the greater thickness of the filaments, the shortness of the articulations, and the marine habitat. I propose to call it *M. æruginea*. It may be defined as follows :—M. minima, stellata, filis 300 $\mu$ altis, 12 $\mu$ circiter crassis, sæpe curvatis et flexuosis; vagina crassiuscula, uniformi, hyalina; trichomatibus 6–7 $\mu$ crassis, ærugineis; articulis, præter infimos diametro fere duplo brevioribus; heterocysta basali oblonga vel hemisphærica, intercalaribus nullis (vel non visis ?).— Hab. Prope Berwick *Rhodochorton Rothii* affixus.—E. A. Batters.

Lepironia mucronata in the Friendly Islands. — Last autumn, Mr. Crosby, who has been staying in the Friendly Islands, sent a spike of a plant to be named, which on examination I refer to the above. The plant is on record for India, Malaya, Madagascar, and Australia. There is a specimen in the British Museum Herbarium from the Fiji Islands. Mr. Crosby found it in a swamp on Vavau, in the Friendly Isles, in 1891.—G. Claridge Druce.

Arenaria gothica Fries.—By the kindness of Dr. O. Nordstedt, I have received a fine series of the above plant in all stages of growth, and collected in various years. These show exactly the same facies as the Yorkshire plant; and Dr. Nordstedt has sent me an extract from a letter from Mr. E. Linnarsson, who has grown the plant in his garden at Sköfde; this shows the absolute identity of our plant with that of Fries, notwithstanding the "annual" in the original description. Mr. Linnarsson says :—"I have first this year cultivated *A. gothica;* the seeds were sown late in August, 1890. Probably it is biennial, in the same mode as *Draba verna*, *Saxifraga tridactylites*, and many other 'annuals.' It is not probable that the plant can live to next year, unless by the very small gemmæ (*i. e.*, winter-buds) at the lowest leaves." Dr. Nordstedt quotes Hartmann (1843), "has simple rachis multicaulis, which seldom becomes perennial;" and goes on to say, "I think this species varies much in habit; when seeds grow early in spring, it is annual; when late in summer, biennial; and in favourable localities perennial by means of winter-shoots. On the specimen of 1859 there is perhaps a fruit from 1858"; this is so. He has sent me seeds from Gotland, and I hope to grow them side by side with the Yorkshire plant. Close as are these forms that cluster round *A. ciliata* L., the Yorkshire plant is clearly not typical *ciliata* nor *A. norvegica* Gunner of the Shetlands and Arctic shores. I should be greatly obliged for seeds of the French and Swiss plant, and later on would willingly send those of the English and Swedish plant for them.—Arthur Bennett.

The Mosses of Co. Donegal (pp. 25, 26). — An apology is certainly due from me to Mr. Hart for having overlooked his paper on the above subject. The only excuse I can give for what is really inexcusable is that Mr. Hart's paper is not indexed under any title but his own name, and was therefore not to be found under any heading to which one naturally referred in looking up the literature of the subject. Fortunately, a knowledge of Mr. Hart's previous paper would not have necessitated any alteration in mine, only nine of the sixty species enumerated by me being given there, and all of those from different localities; but I none the less regret having left Mr. Hart's previous work unacknowledged. It may be worth while to note here that one or two references in Dr. Braithwaite's *British Moss Flora*, Suppl. to vol. i., to records from Donegal Co. under the name "*Holt*" are doubtless taken from Mr. Hart's paper, the name of the verifier having evidently been copied as that of the recorder; Mr. G. A. Holt informed me that they were erroneously attributed to him, and a reference to Mr. Hart's paper clearly shows how the error arose.—H. N. Dixon.

Trichomanes radicans in Spain. — In various books which I have consulted, I have not yet succeeded in finding any special locality given for *Trichomanes radicans* in Spain. The province Galicia is mentioned by Nyman in his *Sylloge* (1855), and is quoted, with the addition of "in sylvis umbrosis" and "v. s." by Willkomm and Lange (1861). These authors also add Portugal to the European range. In 1867, Milde quotes Galicia from Nyman, adding, "non vidi." But, strangely enough, Spain and Portugal are altogether omitted in Nyman's more recent Catalogue, the *Conspectus Floræ Europææ* (1833–4), and its Supplement (1890), in which we find only two stations given on the European Continent, *viz.*, La Rhune, in the Basses Pyrenées, where it was found in 1880 (Gillet et Magne, *Nouvelle Flore Française*, 6me ed. 1887), and St. Jean-de-Luz, in the Western Pyrenées, given on the authority of Petit (1881) in Nyman's 2nd Supplement. I am glad, therefore, to place on record a Spanish locality, for the knowledge of which I am indebted to the kindness of Sir Robert Shaw, who, in September last, showed me growing at Bushy Park, Dublin, a flourishing root, which he told me had been sent to him from Bilbao.—A. G. More.

Silene maritima growing inland.—It may be worth while to note that, a few years ago, when staying at the Snowdon Ranger Hotel, in North Wales, I found *Silene maritima*, in some plenty, on the north shore of Llyn Cwellyn, the height of which is given as 477 ft. above sea-level. *S. maritima* is well known as an alpine plant, occurring also in mountain-valleys at a moderate altitude (*Cybele Britannica*, vol. i. p. 196). Still, it is rare, I believe, to find it growing on the shores of a large lake so far inland as Llyn Cwellyn; and the only similar situation in which I have seen it is at Killarney, where it is found abundantly on the shore of Ross Island, in company with *Arenaria maritima*, at a still lower elevation than in Wales.—A. G. More.

VACCINIUM VITIS-IDÆA AT LOW LEVEL. — In his valuable paper on the 'Mountain Flora of Ireland,'* my friend Mr. H. C. Hart gives 900 ft. in Donegal as the lowest elevation in Ireland for *Vaccinium Vitis-idæa*, and this would place it altogether above the agrarian zones, or limits of cultivation. It may be interesting, therefore, to note that in the late Dr. Moore's herbarium at Glasnevin there are some specimens of *V. Vitis-idæa* labelled as having been gathered on the large bog near Bracklin, Co. Westmeath; and my friend Mr. H. C. Levinge has kindly undertaken to make fresh search in this locality, which I have little doubt may be accepted as correct, especially as I have myself gathered another mountain plant, *Empetrum nigrum*, on the neighbouring bog of Liselogder. Templeton, in his *Catalogue of the Native Plants of Ireland*, records a variety of *V. Vitis-idæa*, with somewhat serrated and waved leaves, as found by himself in 1794 on a bog in Crevetenant, near Ballinahinch, Co. Down; and he gives also as a locality for the type, "Bogs at the southern extremity of Lough Neagh": but I do not think that the plant has been gathered recently in either of these localities. In drawing attention to these lowland stations, my hope is that a renewed search on some of our large inland bogs may lead to the discovery of *V. Vitis-idæa* at low elevation, especially as, in England, it has occurred so far south as in Essex, at no great height above the sea.—A. G. MORE.

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## *NOTICES OF BOOKS.*

*Royal Gardens, Kew. Bulletin of Miscellaneous Information.* London: printed for Her Majesty's Stationery Office by Eyre and Spottiswoode. Five vols. 1887–91.

WE referred to this work on its first appearance as a "curious little production," and the description is still not inappropriate. During the five years of its existence it has gone through many changes. It began "as an occasional publication," and this it still remains, although the dates on its front page imply a monthly issue; it was to contain "notes too detailed for the Annual Report on economic products and plants"; but it has entirely superseded the "Annual Report," and its contents are by no means limited in accordance with the above definition. Judging, indeed, from the last few numbers, the present aim of the Stationery Office is to provide the public, at Government expense, with a scientific journal at the low cost of twopence per number. Since Mr. C. B. Clarke published at Calcutta his *Flora of Andover*, containing 114 pp. and a map, for threepence, it may be doubted whether so cheap a publication has been presented to the public.

Among the peculiarities of the *Kew Bulletin*—a title which is not only convenient, but is sanctioned by being placed on the back

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* Royal Irish Academy, *Proceedings*, 3rd Series, vol. i. p. 533.

of the volumes, though it does not appear on the front page—is the mysterious, not to say ungenerous, warning, "All Rights Reserved," which occurs at the head of each number, or on the wrapper when there is one, as has sometimes happened lately. What these "rights" may be does not appear, and the threat may, for aught we know, be as meaningless as "Trespassers will be prosecuted." Here, for example, is "Appendix 1, 1892,"—the *Bulletin* has various appendices, to which are relegated "information of a purely formal kind,"—which is entirely occupied with a list of the seeds matured at Kew during 1891. What "rights" are likely to be infringed in this case? Had a copyright been claimed for the amusing enumeration for 1885, we could more easily have understood it.

Another peculiarity is in the absence of any editor's name. Whether Dr. Dyer* or Mr. Morris acts in this capacity, we do not know—probably the former, as Director of Kew; but surely this should be stated? The continuous numbering of the articles in roman figures also strikes us as odd.

The more especially botanical aspect of the *Bulletin* began last August, when Mr. Rolfe published a decade of new Orchids. In the number dated October and November, 1891, but really issued in January of this year, is a list of the plants collected by Dr. Brown Lester on the Gambia Delimitation Commission. In this we find Mr. Baker's name attached to a "nomen nudum" to which we decline to give further publicity. The publication of *nomina nuda*, which of course has no claim to recognition,† is an old offence at Kew; we wonder by what plea of "convenience" the "Kew botanists" (to quote Mr. Hemsley's phrase) justify this

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* We note, by the way, that, both here and in the *Annals*, this gentleman has adopted the long-threatened hyphen, and writes his name "Thiselton-Dyer"; and that there are indications that this example will be followed by others. Among our contributors will be found many who now print in full their second name, which was at one time only indicated by a modest initial; and the insertion of the hyphen will probably be merely a question of time. Dr. Dyer himself began as "W. T. T. Dyer." May we, before it is too late, point out that, in spite of Dr. Dyer's sanction and the charms of fashion, such a proceeding is likely to produce serious inconvenience? The owner of such a name will have to be indexed under each part of it, or it will be difficult for after ages to trace his continuity; and how will it work in the case of new species? Are we to print the new combination in full? How are future generations to identify the old "Dyer" with the new "Thiselton-Dyer"? and how is the latter to be abbreviated? We should be sorry to deprive anyone of such happiness as can be afforded by a hyphen, but if our contributors generally follow the fashion, and there is no reason why they should not, we shall have to enlarge our index. Our friend Mr. Hemsley has rapidly progressed through the three stages in newspaper literature; but at present the combination Botting-Hemsley has not, we believe, received his sanction. May we hope that he will withhold it, in the interests of "convenience"—a plea to which he of all men should not be deaf—and of common sense?

† This is fortunate, as future writers would date the species from 1891,—the ostensible date of publication, although it was not actually published until 1892. Similarly, Mr. Ridley's *Utricularia bryophila* appeared in the *Annals of Botany* under the date of Nov. 1888, but this was not really published until Jan. 1889. In cases of irregular publication, the plan adopted in the *Journal of the Linnean Society*—of placing the date of each part on the back of the title-page—should be followed.

irregular proceeding. Mr. Baker publishes in the January number for this year a list of the Agaves and arborescent Liliaceæ cultivated on the Riviera: in this the following novelties are described:—*Agave Hanburii*, *A. Franzosini* "Hort. Hanbury," *A. Davilloni*, *Beschorneria viridiflora* "Hort. Hanbury" ("probably *B. yuccoides* in a state of full development"), *Yucca Hanburii*, *Dasylirion juncifolium* "Hort. Hanbury" ("may be *D. quadrangulatum* in a state of full development").

Other important subjects treated of in the *Bulletin* have been mentioned from time to time in our pages. The number dated December last (published in February) contains an extremely interesting compilation by the Director, in which the history of Kew Gardens is traced from their establishment down to the appointment of Sir W. J. Hooker in 1841: "the history of the last half-century will be given in another number." This is excellently well done; the history of the various personages mentioned is treated exclusively in relation to Kew, and there is therefore no ground for complaint as to incompleteness. Here again, however, the oddness of the publication manifests itself: the jubilee year of Kew Gardens was 1891, and Dr. Dyer tells us this number was intended to "mark the occasion"; yet, although dated December, 1891, it did not appear until February, 1892!

Enough has been said to show that, among the "miscellaneous information" contained in the *Bulletin*, there is much which deserves the attention of botanists. There is also evidence of the activity of Kew in many departments of research, and of the success which frequently attends it. One chapter on botanical enterprise in the Niger Protectorate, is pathetic in its simple record of the spirited but unsuccessful attempts of two Kew gardeners—George Woodruff and Harold Edmund Bartlett—to take charge of the botanical stations in the interior. A touch of bathos is, however, supplied by the Editor, who, censuring the Royal Niger Company for their refusal to allow the men to carry on a correspondence with Kew, says that "no blame of the slightest kind can attach to the Company" for the deaths of the two men—as though it might be supposed that this resulted from the above-mentioned refusal!

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*Précis de Botanique Médicale.* Par L. Trabut. Paris: G. Masson. 1891. Small 8vo, pp. 699. 8 *fr.*

This work occupies a somewhat unique position. It cannot be described as a work on Materia Medica in the pharmaceutical sense of the word, for it contains hardly any physical or histological descriptions available for distinguishing one drug from another; nor is it a work on Materia Medica in the medical sense, for the descriptions given of the medicinal uses of the plants enumerated are comparatively meagre.

It is strictly an account of plants used in medicine, or related to health and disease. The author considers that the study of botany, as applied to medicine, should include:—(1st) Plants used

in the cure of disease; (2nd) alimentary plants; (3rd) poisonous plants; (4th) plants capable of causing disease. He also considers a knowledge of the biology of plants to be valuable for the purpose of throwing light upon the morphology and physiology of man. Consequently the book is divided into two parts, the first including a brief description of all plants included in the four classes above mentioned, and the second containing a *précis* of the morphology and physiology of plants. In the first part medicinal plants are treated in the descending order, under the head of Phanerogams, Ferns and their allies, Muscineæ, and Thallophytes. The classification of the natural orders of Phanerogams is, of course, that of French botanists, commencing with the Solanaceæ, and ending with the Coniferæ.

The groups, however, approximate, with a few exceptions, to the cohorts in Bentham's *Genera Plantarum*. An excellent analytical key to each group and to each natural order is given, which renders it an easy matter for the student to see at a glance the distinctive characters of the different genera.

A small but characteristic figure of all the more important species is also given. These would be more useful if some indication of the relative height of the plants or of the size of the leaves and flowers were given. No less than 830 figures are given in a work of 699 pages. The portion relating to Thallophytes is one that has not yet been usually treated of in British works on medical botany, and includes a description of Entomoparasites and Dermatophytes, Moulds, Saccharomyces, Bacteria, and the Sporozoaires of Leuckart.

The second part is an admirable *précis* of General Botany. If a chapter on the use of the microscope in histological work, containing a fuller account of the reagents and the methods employed, had been added, the book would have been as complete as could be desired. The author, M. Trabut, is Professor of Medical Natural History in the School of Medicine and Pharmacy of Algiers. In that country, where, as in France, a large number of plants are employed in the form of herbs, the botanical descriptions and analytical keys to the orders and genera must prove extremely useful. The book can be especially recommended for the use of medical men and dispensers in foreign stations, where libraries are not readily available, and modern books not easily obtained. To the ordinary student it affords an excellent *résumé* of economic botany, with a bird's-eye view of the subject of bacteriology up to the present date, such as would otherwise have to be sought in works especially devoted to the subject, except, perhaps, in the excellent *Traité de Botanique Médicale Cryptogamique* of Dr. H. Baillon, where the latter subject is treated at greater length. There is probably no book which covers exactly the same ground as M. Trabut's little volume. For brevity and clearness of description, for the wide range of ground it covers, for careful selection of the more important plants, and for accuracy of statements, it would be difficult to find a treatise more convenient and more generally useful to the student of Medical Botany.

E. M. Holmes.

## *ARTICLES IN JOURNALS.*

*Annuario del R. Ist. Bot. di Roma* (v. 1). — R. Pirotta, 'Sulla presenza di serbatoi mucipari nella *Curculigo recurvata*.'— U. Brigi, 'Reliquie notarisiane: Muschi.'—L. Re, 'Sulla presenza di Sferiti nell' *Agave mexicana*.'

*Bot. Centralblatt.* (Nos. 3–6).— K. Pappenheim, 'Eine Methode zur Bestimmung der Gasspannung in Splinte der Nadelbäume.'— (Nos. 4, 5). J. Briquet, 'Zur generischen Nomenclatur der Labiaten.'— —. Harz, 'Beiträge zur Flora Münchens' (*Achillea Millefolium*). — (No. 6). O. Kirchner, 'Botogynisch oder narben vorreif"?— (No. 7). E. Procopp, *Testudinaria Cocolmeca*, sp. n.— G. v. Schlepegrell, 'Zur vergleichenden Anatomie der Tubifloren.'

*Bot. Gazette* (Jan.).— A. F. Foerste, 'Relation of certain fall to spring blossoming plants' (2 plates). — H. L. Russell, 'Effect of mechanical movement on growth of certain flower organisms.'— A. Carter, 'Notes on Pollination.'

*Bot. Jahrbücher* (Feb. 5). — R. Keller, 'Neue Standorte und Formen orientalischen Potentillen.' — E. H. L. Krause, 'Zur Geschichte des Pflanzenwuchses in Nordwesteuropa.'

*Bot. Magazine* (Feb.).—*Hydnophytum Forbesii* Hook. f., *Begonia glaucophylla* Hook. f., spp. nn.

*Bot. Magazine* (Tokio) (Jan. 10). — K. Okannura, '*Ecklonia radicosa*.' — R. Yatabe, *Spiræa tosaensis* & *Saxifraga Watanabei*, spp. nn.

*Bot. Notiser* (häft. 1: Feb.). — T. M. Fries, 'Egendomliga sammanvaxningar hos barrträd.' — F. R. Kjellman, 'De fanerogama växternas meristem.' — R. Sernander, 'Om de upländska torfmossarnes byggnad.'—A. G. Kellgren, 'De skogbildande trädens utbredning i Dalarnes fjälltrakter.' — V. B. Wittrock, '*Phragmites communis* Trin., f. *stolonifera*.'.

*Bot. Tidsskrift.* (xviii. 1). — F. Didrichsen, 'Afbildninger til Oplysning af Græskimens Morphologi' (4 plates).—C. T. Bartholin, 'Nogle i den bornholmske Jura formation forekommende Planteforsteninger' (6 plates). — L. K. Rosenvinge, 'Om nogle Vækstforhold hos Slægterne *Cladophora* og *Chætomorpha*.'

*Bot. Zeitung* (Jan. 22).—F. Hildebrand, 'Einige Beobachtungen an Keimlingen und Stecklingen.' — (Jan. 29). W. May, 'Die Reiscultur, insbesondere in Brasilien.' — (Jan. 29–Feb. 12). H. Solms-Laubach, 'Ueber die in den Kalksteinen des Kulm von Glätzisch-Falkenberg in Schleisener halten structurbietenden Pflanzenreste.'

*Bull. Soc. Linn. Paris* (Jan.). — H. Baillon, 'Deux nouveaux types de Loranthacées' (*Nallogia*, *Triarthron*).—Id., 'La prétendue adhérence du nucelle des Conifères.' — Id., 'Sur une nouvelle Mappiée du Congo.'—Id., 'Plantes de Madagascar' (contd.).

*Flora* (Jan. 19). — A. Richter, 'Ueber die Anpassung der Surswasseralgen an Kochsalzlösungen.' — J. Sachs, 'Physiologische Notizen.' — P. Taubert, 'Leguminosæ novæ vel minus

cognitæ austro-americanæ' (*Goniorrachis*, gen. nov.: 1 plate). — C. Correns, 'Ueber die Abhängigkeit der Reizerscheinungen höherer Pflanzen von der Gegenwart freien Sauerstoffes.'

*Gardeners' Chronicle* (Jan. 30). — *Epidendrum Godseffianum* Rolfe, sp. n. — *Streptocarpus Galpini* [W. Watson], sp. n. (fig. 24). — (Feb. 6). *Catasetum Liechtensteinii* [sic] Kränzlin, sp. n. — (Feb. 13). R. A. Rolfe, '*Cycnoches glanduliferum*.' — (Feb. 20). *Cypripedium Chamberlainii* O'Brien, sp. n. (fig. 34).

*Journal de Botanique* (Jan. 16). — E. G. Camus, 'Monographie des Orchidées de France.' — C. Sauvageau, 'Sur quelques Algues phéosporées parasites.'

*Journ. R. Microscopical Soc.* (Feb.). — A. W. Bennett, 'Fresh-water Algæ and Schizophyceæ of South-west Surrey' (*Pediastrum glanduliferum*, *Cosmarium minutum*, *C. Westianum*, spp. nn.).

*Malpighia* (v. fasc. 6). — H. Ross, 'Le *Capsella* della Sicilia.' — D. Lanza, 'Gli *Adonis* di Sicilia e di Sardegna.' — G. B. de Toni, 'Algæ abyssinicæ a Penzig collectæ.' — A. Saccardo, 'Fungi abyssinicæ a Penzig collectæ' (1 plate).

*Midland Naturalist* (Feb.). — W. Mathews, 'History of County Botany of Worcester' (contd.).

*Naturalist* (Feb.). — J. B. Davy, Additions to Alford (Linc.) Flora, 1891, and plants of Gibraltar Point (Linc.).

*Oesterreichische Bot. Zeitschrift*.—P. Magnus, 'Beitrag zur Kenntniss einer österreichischen Ustilaginee.' — R. v. Wettstein, 'Die Arten der Gattung *Gentiana* § *Endotricha*.' — H. Sabransky, 'Zur Brombeerenflora der Kleinen Karpathen' (*Rubus Ampelopsis*, *R. Progelii*, spp. nn.). — J. Ullepitsch, *Prunella Pienina*, sp. n. — J. Freyn, 'Plantæ novæ Orientales' (*Astragalus grandiflorus*, *A. xylorrhizus*, *A. xanthinus*, *A. viridissimus*, spp. nn.).—K. Rechinger, 'Zur Kenntniss der Gattung *Rumex*.'

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## *BOOK-NOTES, NEWS, &c.*

THE first part of an important new publication, to be called *The British Museum Phycological Memoirs*, will shortly be issued by Messrs. Dulau and Co. It will contain memoirs on a new order of Algæ by Miss Mitchell and Miss Frances Whitting; on a fossil Alga from the Secondary Rocks, and on the structure of Dictyosphæria, by Mr. Murray; on some malformations of Algæ caused by animals, by Miss Barton; and on a new genus of perforating Algæ, by Mr. Batters: and will be illustrated by eight plates. It is intended to issue parts at about half-yearly intervals. A school of Phycology has arisen in the British Museum at Cromwell Road, and this publication is designed mainly as a record of the fruits of its research. If we may judge by the contents of the first part, there will be no lack of interest in the papers. The *Memoirs* will be edited by Mr. George Murray.

We have received the announcement of a new monthly review, to be entitled *Natural Science*, the first number of which is to appear on March 1st. Judging from the prospectus, it would seem to be intended as a kind of monthly *Nature*, and it is issued by the same publishers. The British Museum staff is largely represented among the contributors. The botanical articles promised in the first number are, "Some recent researches on the Classification of Flowering Plants," by Mr. A. B. Rendle, and "Palæobotanical Notes," by Mr. Thomas Hick. The name of the editor does not appear.

What promises to be a very useful addition to our Floras is announced as *Conspectus Floræ Africæ*—a new undertaking of which M. Durand, of Brussels, already well known as an accurate and industrious compiler, and Dr. H. Schinz, of Zurich, are to be the compilers. The African Flora so far has been unfortunate. The *Flora of Tropical Africa*, for which the Kew staff was responsible, extends only as far as *Ebenaceæ*, and its last volume appeared fifteen years ago: this is now in course of continuation at Kew. The *Flora Capensis*, in spite of many promises, stands where it did in 1865—at the end of *Campanulaceæ*. The *Compendium Floræ Atlanticæ* is a third example of "arrested development": this was terminated in 1887 by the death of Dr. Cosson. The *Conspectus* will consist of six volumes of about 500 pages each; the fifth, containing the Monocotyledons, will be the first to be issued. Judging from the prospectus, and the specimen page accompanying it, as well as from the position of the authors, we have every reason to anticipate a valuable accession to our works of reference. The Mascarene islands will be included in the enumeration.

The *Transactions and Journal of Proceedings of the Dumfriesshire and Galloway Natural History Society* for 1890–91 contains papers of botanical interest by Mr. G. F. Scott Elliot on the Dumfriesshire Flora; a list of Dumfriesshire Lichens and botanical notes by Mr. James M'Andrew; notes on the Moffat flora by Mr. J. T. Johnstone. There is also a paper on "References to the Dumfriesshire Flora in Shakespeare [!] and Burns," by Mr. James Shaw, which, even as "abridged," does not merit publication. The Catalogue of the Library requires much revision: it contains such funny entries as, "Botanica, Philosophia. By Caroli Linnæ"; "(Botany) General Plantarum. By Caroli Linnæ." The volume is commendably cheap—156 pages for 1s. 6d.

Mr. James O'Brien has heaped coals of fire on the head of Mr. Joseph Chamberlain by dedicating to him a new *Cypripedium*, "a charming plant, and well worthy to bear [his] name." Mr. Chamberlain's name will thus go down to posterity inseparably linked with that of one of his political opponents: "*Cypripedium Chamberlainianum* O'Brien" is a delightful combination.

We are glad to see that Prof. E. L. Greene is making progress with his *Flora Franciscana*, of which part ii. is before us. The sequence of orders adopted by the author is extremely puzzling to

old-fashioned folk, and the index to the volume will probably be consulted more frequently than is usual in books of the kind.

We have received the first two volumes (1889, 1892) of the *Transactions* of the Burton-on-Trent Natural History and Archæological Society, in which are the following botanical papers: (1889) "Notes on Micro-organisms" (four plates) and "A Grain of Barley" (five plates), by Mr. Horace T. Brown; "the Wild Plants of Foreign Barley Fields," by Mr. J. G. Wells, who would have done well to send his undetermined species to some botanist for identification; and notes on "The Influence of Temperature on the Progress of Vegetation," by Mr. T. Gibbs: (1892) "Notes on a Salt-Marsh at Branston," by Messrs. J. E. Nowers and J. G. Wells; and "Some Varieties of Huskless Barley from Tibet," by Mr. H. T. Brown. There are other papers of general rather than local interest, notably one on "The Irish Aran," by Mr. P. B. Mason, which is well illustrated, but is, we think, out of place in the *Transactions* of a local society.

We have received from the Essex Institute, Salem, Mass., a nicely printed little book, called *Our Trees*, by Mr. John Robinson, containing a popular account of the cultivated and native trees of Salem and the neighbourhood.

The extraordinary and unprincipled attempt of the War Office to grab a portion of the New Forest for military purposes is, we are glad to see, exciting the strongest opposition from representatives of all classes of society. The proposed action is taken under the Ranges Act of 1891, and is in direct contravention of the New Forest Act of 1877. A new Bill has been introduced with a view to limiting the powers of the War Department, which we trust may prevent the proposed outrage, against which every naturalist will protest. Petitions in opposition to the scheme of spoliation are being extensively signed, for which Mr. Herbert Goss, Secretary of the Entomological Society, 11, Chandos St., Cavendish Square, W., will gladly receive names.

Prof. Baillon's important *Dictionnaire de Botanique*, which has been in progress since 1876, is now completed; the last part, which has just been issued, contains a supplement to the work, by which the whole is brought up to date.

The "new herbarium pest," to which attention has been directed, is perhaps no novelty. Prof. Riley described it as *Carphaxera ptelearia*, but Mr. R. M'Lachlan points out in the *Gardeners' Chronicle* that an insect of similar habit—*Acidalia herbariata*—has been known here for nearly a century, and was described by Fabricius in 1798, who says of it, "Habitat in herbariis folia plantarum exsiccatarum exedens."

The part of the *Icones Plantarum* issued in January completes the first of the two volumes which Sir Joseph Hooker is devoting entirely to Indian Orchidaceæ. These volumes will be extremely valuable, not only to orchidologists, but in connection with Sir

Joseph's monograph of the Indian species published in the *Flora of British India*.

The twelfth volume (1890–91) of the *Proceedings* of the Dorset Natural History Society and Antiquarian Field Club—the titles of these local bodies are terribly lengthy!—contains a paper on Dorsetshire *Rubi*, by the Rev. R. P. Murray, and a presidential address by Mr. J. C. Mansel-Pleydell, whose new *Flora of Dorset* is, we are glad to learn, making satisfactory progress. Mr. Mansel-Pleydell is retiring from the presidency, which he has held since the formation of the Club in 1875.

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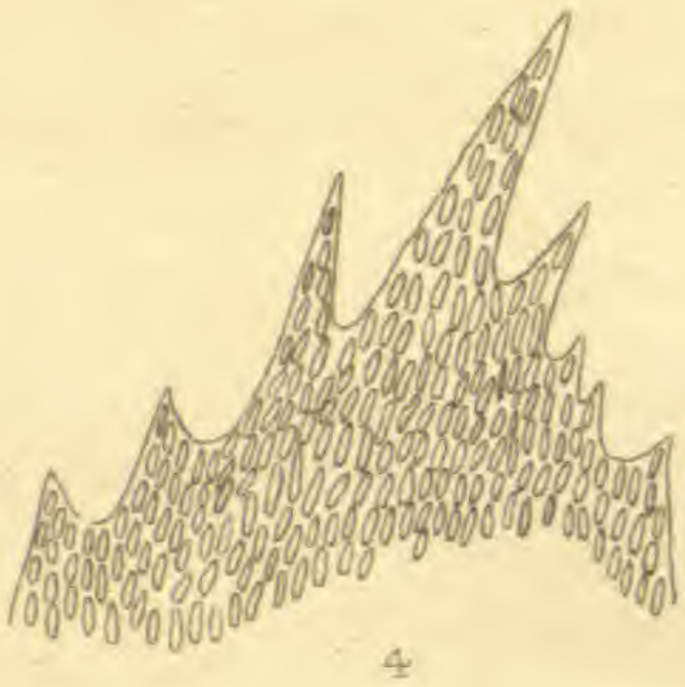
## *OBITUARY.*

We regret to record the death of Col. James Augustus Grant, which took place at Nairn (where he was born on April 11, 1827) on the 10th of February. His name will most generally be associated with the Government Expedition to the source of the Nile in 1860, on which occasion he made a valuable collection of plants between Zanzibar and Cairo, which is now in the Kew Herbarium. Of these a list is given as an appendix to Speke's *Journal of the Discovery of the Source of the Nile* (1863). This collection, which proved to be of much interest and importance, was the result of what almost be termed an accident. "When I was appointed to accompany Captain Speke," says Col. Grant, "it occurred to me that many a pleasant hour might be spent in collecting plants and seeds while traversing the country to be explored. I confess I did not then anticipate any botanical importance from such a collection. With this idea (more of pleasant occupation than of scientific result), before embarking at Plymouth, I purchased some drying-paper and a couple of books for notes, all for a few shillings. When Captain Speke saw this bundle of paper, he thought it far too cumbrous for such a journey, but he readily yielded to my wish to have it. He afterwards saw with me how the plants were appreciated when we took them to Kew upon our return." This sentence prefaces the important account of "The Botany of the Speke and Grant Expedition," which forms vol. xxix. of the Linnean Society's *Transactions* (1873–5). The enumeration, by Prof. D. Oliver and Mr. J. G. Baker, is enriched by Col. Grant's notes, which show careful observation, and by 136 plates, executed at his expense. Col. Grant joined the Linnean Society in 1871, and was elected F.R.S. in 1873. He is commemorated in *Anthericum Grantii* and other species, the name *Grantia* having been already employed by Boissier, in commemoration of Dr. James Grant, a geographer but apparently not a botanist.

We regret to announce the death of Dr. Karl Richter, who died at Vienna on the 28th of December, in his thirty-sixth year. Dr. Richter is best known in connection with his *Plantæ Europeæ*, which was reviewed at some length in this Journal for 1891, pp. 85–88.



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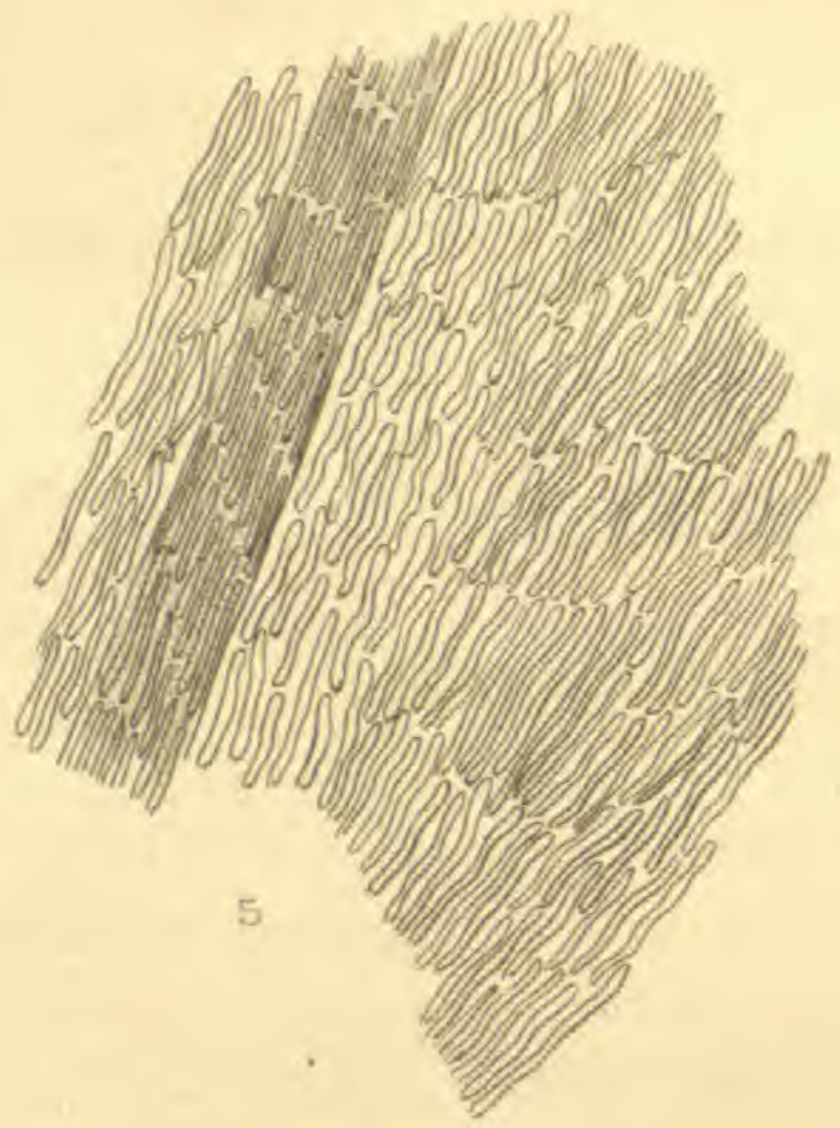

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H Boswell del ad nat
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Homalia densa n.sp.

# NEW EXOTIC MOSSES.

By Henry Boswell, M.A.

(Plate 320.)

The following few mosses from various countries seem irreconcilable with any that I can find described and to be worth publishing. Unfortunately, having been mostly collected by somewhat inexperienced hands, and forwarded by means of letters, they are in nowise so plentiful in quantity or so perfect in condition as might be desired. But they are interesting forms, and will serve to show that the mosses of the tropics yet require a great deal of looking after, and have many yet unknown species amongst them awaiting collectors.

**Orthotrichum hortense**, n. sp. — Habitus O. affinis sed laxior, irregulariter cæspitosum; caulis dichotome innovans ramosus. Folia erecto-patentia et recurvata, in statu sicco erecta laxe contorta, e basi dilatata anguste lanceolata, marginibus ad medium reflexis, ad basin et apicem planis, breviter papillosa; cellulis superioribus densis, rotundatis, inferioribus elongatis, pellucidis, ad margines dilatatis quadratis. Calyptra mitrata, acuminata, straminea, nitida, hirsuta, apice purpurea. Capsula exserta in pedicello brevi, cylindraceo-oblonga, anguste striata, sicca plicata, sub ore lato coarctata. Peristomii dentes bigeminati, rufo-aurantii, sicci reflexi.

On trees in a garden, Hamner Plains, New Zealand, *Mr. Roper*; sent me by the Rev. C. H. Binstead.

This, with much the general appearance of average *O. affine*, has the leaves more acute, more spreading and subsquarrose, and when dry somewhat twisted; the seta is rather longer, and capsule more exserted; the calyptra more hairy, paler, glossier, yellower, with a purplish apex, like that of *O. stramineum*. The exserted capsules give some resemblance to *O. speciosum*, while the red peristome is suggestive of *O. pulchellum*.

As in the *Macromitrium*, the fruits are either too old or too immature to show the operculum and inner peristome.

**Macromitrium prolixum**, n. sp. — Caulis repens, valde elongatus, ramis erectis fasciculatis; folia erecto-patentia, sicca crispata, lineari-lanceolata, acuta, nervo sub apice evanido carinata, cellulis superioribus minutis, rotundatis, distinctis, inferioribus elongatis, angustis, strictis, omnibus lævibus. Theca in pedunculo modice elongato, ovalis, ore contracto, plicato, intensius colorato, rubro; operculum rostratum.

Wooded glen, Blue Mountains, New South Wales, *Mr. Roper*. Sent me by the Rev. C. H. Binstead.

Near to *M. Didymodon* Schwaegr., the primary stems more elongate, far creeping, with branches a little taller and more robust; leaves acute; seta longer. The calyptra is wanting, while the old capsules are without any intelligible remains of a peristome,

and others younger are only just sufficiently advanced to show a rather long, straight, subulate operculum in an immature condition.

**Meteorium ustulatum**, n. sp. — Rami elongati, penduli, ramulis brevibus turgidis pinnati, vel ad apicem innovationum ramulis elongatis laxe fastigiatis ramosi; folia dense patenti-imbricata, concava, late oblonga, basi cordata, apice obtusa angulis rotundatis, acumine subulato terminata; nervo tenui, ultra medium producto; cellulis angustis papillis crenulatis, ad angulos basilares dilatatis quadratis in glomerulum luteum aggregatis.

Ceylon, 1875, *Mr. Abbay*.

A handsome moss; colour rich yellow in the newer growth, the old parts being of a blackish or dark brown hue. Apparently very near *M. punctulatum* C. Mull., but differing therefrom, as also from *M. auronitens* and *filamentosum*, in the short, straight, subulate leaf-point.

**Homalia densa**, n. sp.—Dioica? Frondosa; caulis subelatus (circa 2 pollicares), basi brevi subnuda, foliis squamæformibus; superne dense tripinnatus ramis complanatis; folia caulina magna, imbricata, oblique inserta, asymmetrica, oblongo-ligulata, apice acute acuminata et grosse dentata, nervo tenui ad medium producto, interdum furcato; folia ramulina multo minora, obovato-oblonga, cæteroquin similia; cellulæ inferiores elongatæ, angustæ, sub-sinuosæ, superiores elliptico-ovales, alares nullæ.

Insula Oahu, 1890, *E. Worthington*.

A very pretty moss, which has been sent to me by Mr. Rogers, who received it from the collector. It much resembles the *Neckera Javanica* of C. Müller's *Synopsis*, *N. Australasica* ejusd. (*N. dendroides* of Hooker's *Musci Exotici*, tab. 69), and *N. scalpellifolia* Mitten, *Musci Indiæ Orientalis*, all of which are referable to the genus *Homalia*. From these and their immediate allies it differs in the shorter stature and close ramification. Fruit is wanting, but the remains of a decayed seta show a very close similarity to that of *H. scalpellifolia* and *flabellata*.

The figure (t. 320) is a pretty exact representation of one of the two fronds I have received; the other is still mere densely and numerously ramulose, but similar in stature.

**Raphidostegium tegeticula**, n. sp. — Monoicum; dense depresso-cæspitosum; caulis procumbens fastigiatim ramosus, ramis apice curvatis; folia subfalcato-secunda, anguste oblongo-lanceolata, subulato-acuminata, argute serrata, cellulis angustis dorso prominentibus papilliformis; alaribus 3–4 valde conspicuis, intense coloratis, aurantiacis; perichætialia erecta, lanceolata, longe anguste attenuata, grosse serrata. Theca in pedunculo breviusculo rubro, ovalis horizontalis. Cætera desunt.

Nova Caledonia.

Apparently near *R. prominulum* (Mitt.) of South America, but with leaves more elongate and more strongly serrated. Forming a dense yellow-coloured mat upon decayed wood; stems creeping, producing from the under surface numerous long reddish rootlets.

Capsules seem to have been numerous, but, excepting one, which is damaged, have all been destroyed, leaving only the bare setæ remaining.

**Isopterygium acuminatum**, n. sp.—Laxe cæspitosum, cæspites demissi, mollis, smaragdino- et lutescenti-virides. Folia distiche compressa, nitentia, ovato-lanceolata, elongata, piliformi-acuminata, basi truncata, marginibus integerrimis, nervis brevissimis obsoletis; cellulis perangustis elongatis, basilaribus dilatatis, subquadratis luteis; theca oblonga, horizontalis inclinata.

Tasmania; Glen Rae, 1891, *Mr. Weymouth.*

A rather larger plant than *I. tenerum* (*Hypnum*) Swartz. from the West Indies, the leaves rather wider, long and slenderly acuminate. Colour bright glossy-green and straw-yellow. The opercula have vanished; the peristome seems normal.

**Acrocladium trichocladium**, n. sp. — Rami laxe cæspitosi laxe inordinate pinnati, elongati, tenuissime attenuati. Folia distichacea lateraliter compressa, late-oblonga, acumine brevi subrecurvo terminata, marginibus integerrimis, nervis binis brevissimis, cellulis angustissimis elongatis, ad basin brevioribus latioribus.

Forming part of the outside of a bird's-nest received from Australia by Mr. Hardy, of Owen's College, Manchester. Other mosses woven with it were *Neckera aurescens* and *Climacium sulcatum.*

Resembling *A. politum* (*Hypnum*) Hook. & Wils. in the foliage, but with a very distinct aspect from the long slender branches, tapering to a length of three or four inches, giving the plant much the appearance of the *Eurhynchium trichocladon* Dozy & Mlk. *Bryol. Javan.*, though very different in structure and essential characters. The foliage is rather less glossy than in *A. politum.* Of fruit there is no appearance.

**Hypnum devexum**, n. sp.—Caulis ascendens, pinnatim ramosus ramulis acuminatis acutis; folia caulina erecto-patentia, concava, oblongo-lanceolata, acuminata, superne acute serrata; folia ramea brevior, obtuse-acuminata; nervis brevibus obscuris vel obsoletis; cellulæ angustæ ad angulos basilares dilatatæ, inflatæ, luteæ, incrassatæ; capsula in pedunculo elongato, rubro, lævi, ovato-oblonga, forte arcuata, sub ore constricta, brunnea; operculum pallidior, conicum, acutum.

Blue Mountains, Australia, *Mr. F. Roper.*

General aspect not unlike that of *Isothecium myurum*, or of *Hypnum stoloniferum* Hook. *Musci Exotici*, but smaller. Quite distinct from all that group in the nerveless leaves, and apparently allied nearly to *H. tanytrichum.*

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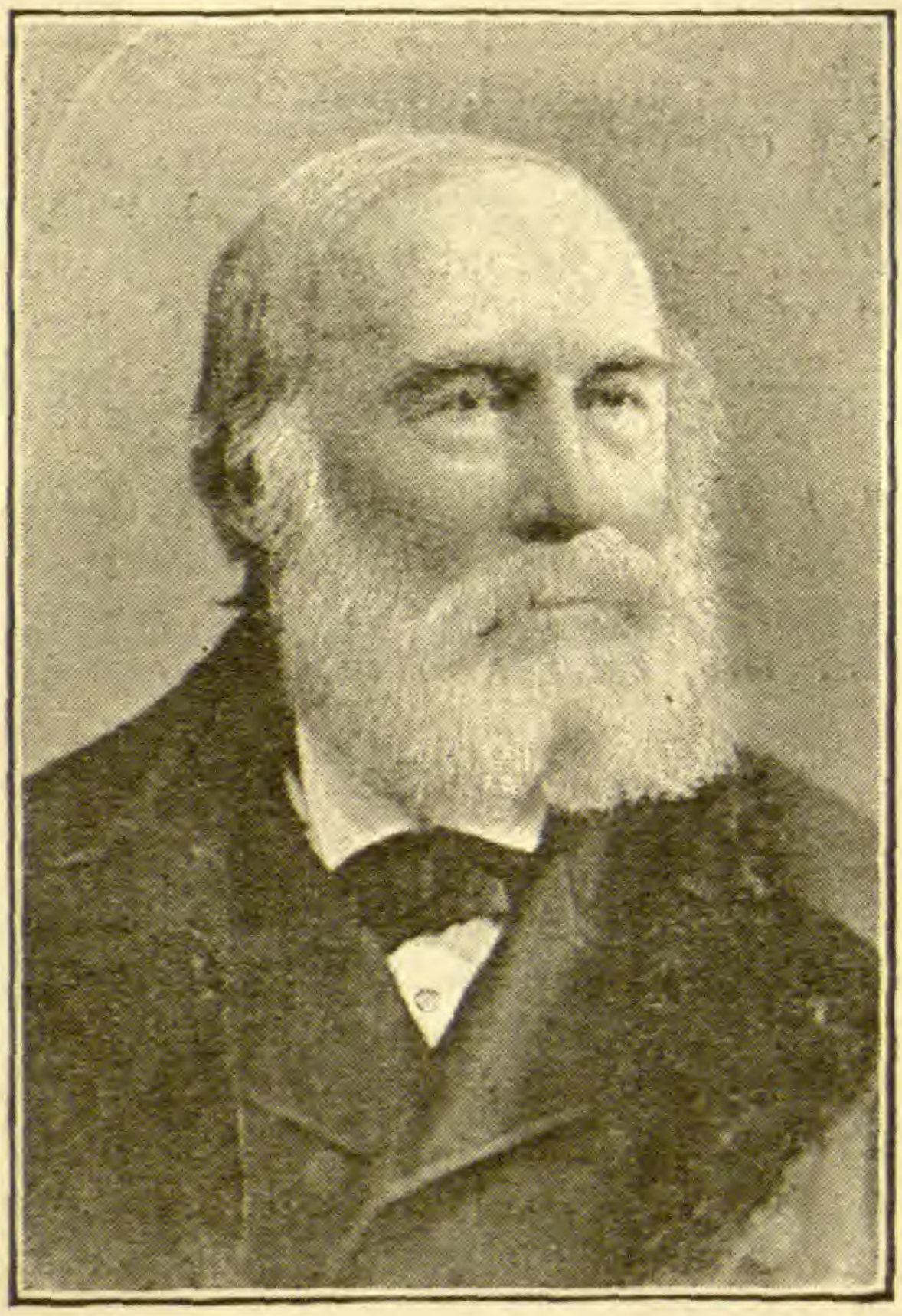
Explanation of Plate 320.—*Homalia densa.* Fig. 1, plant, natural size. 2, 2, leaves of stem or main axis. 3, 3, 3, leaves of branches. 4, apex of leaf. 5, base of same, to show areolation.

# WALTER HOOD FITCH.

The death of Mr. W. H. Fitch, which was briefly mentioned in this Journal for January, has removed from among us one who, although not a botanist in the strict sense of the word, was so long and intimately associated with botanical literature that some record of his work may be expected in these pages.

Walter Hood Fitch was born in Glasgow on the 28th of February, 1817. The family not long after removed to Leeds, where his father became book-keeper to a large firm of flax merchants; but they returned to Glasgow when Walter was about eight years old. Somewhat later, his taste for drawing having developed, he was set to work at drawing patterns for calicoes, muslins, &c. He employed



his evening leisure in glueing down plants for Dr. (afterwards Sir William) Hooker, who lent him a book of outline plates, and was so pleased with his copies that he secured his services by paying back his apprentice-fee to the master of the print works where he was engaged. From this time the career of Fitch as a botanical artist may be said to date.

Under so competent an instructor, and in a position so suited to his tastes, young Fitch made rapid progress. His name first appears in the *Botanical Magazine*, in connection with which much of his best work was done, in October, 1834, on plate 3553 (*Mimulus roseus*). In 1836, Sir William Hooker began the *Icones Plantarum*, and, although Fitch's name does not appear upon them, we believe that he was responsible for the plates. When Sir William went to

Kew in 1841, Fitch went with him, and there spent the remainder of his life: the two were associated in many undertakings. The list of publications which Fitch illustrated during the succeeding forty years would be a long one—too long, indeed, for insertion here; and it is only possible to glance at a few of them.

Fitch was a lithographer as well as an artist, and his published plates therefore have not, as is sometimes the case, failed to represent the meaning of the draughtsman. Among his earlier work may be named the plates of the *Genera Filicum* (1842) taken from Francis Bauer's beautiful drawings; of these Sir William says in the preface: "[they] have been all executed under my own eye, in zincography, by a young artist, Walter Fitch, with a delicacy and accuracy which I trust will not discredit the figures from which they were taken." Of his larger work, good examples may be found in Sir William Hooker's *Victoria regia* (1851) and Dr. (now Sir) J. D. Hooker's *Illustrations of Himalayan Plants* (1855); in the preface to the latter, Sir Joseph speaks of the "unrivalled skill in seizing the natural characters of plants" of this "incomparable botanical artist," thus showing the very high estimate which had been formed of Fitch's work. His most recent folio plates are those to Mr. Elwes's *Monograph of Lilium* (1880), on the title-page of which Fitch's name stands as illustrator. The New Zealand, Antarctic, and Tasmanian Floras of Sir Joseph Hooker, the *Transactions* and *Journal* of the Linnean Society (the former including such important works as Welwitsch's *Sertum Angolense*, the Botany of the Speke and Grant Expedition, Bentham's monographs of *Mimosa* and *Cassia*, and Triana's *Melastomaceæ*—the plates of which Fitch once told us had given him more trouble than anything he had ever undertaken), the Botany of the *Biologia Centrali-Americana*, the *Botany of the 'Herald,'* and *Flora Vitiensis*—these are only some of the more important of the works illustrated by Fitch.

Many gardening and horticultural journals were from time to time illustrated by Fitch, and examples of his work will be found in our own earlier volumes. He prepared the very charming figures for the illustrated edition of Bentham's *Handbook*, and the *Illustrations of the Natural Orders* issued by the Science and Art Department in 1874. From time to time he contributed large groups of roses, lilies, and the like to the *Gardeners' Chronicle*, as well as woodcuts of British plants in their natural habitats—the least satisfactory examples of his work. In the *Chronicle*, too, he published in 1869 an admirable series of lessons on "Botanical Drawing"—so far as we know, his only contribution to literature. It has long been a matter of wonder to us that these lessons have never been reprinted, and we mention the fact in the hope that they may yet be brought out in an accessible form.

The long connection of Fitch with two of the works already mentioned—the *Botanical Magazine* and the *Icones Plantarum*—came to an end in 1877. In 1869, Sir Joseph Hooker had dedicated a volume of the former to him, as "the accomplished artist and lithographer of upwards of 2500 plates already published of the *Botanical Magazine*," and it seemed likely that the number would be

indefinitely augmented. But a regrettable difference arose between Fitch and his employers, which resulted in the withdrawal of the former from his connection with the Kew serials. Into the merits of the dispute we have neither wish nor occasion to enter; letters from Fitch now before us show that he considered himself seriously aggrieved, and with some appearance of reason; and the botanical and horticultural public were certainly losers by the event.

From this time Fitch's health began to fail, and although his work became less frequent, in 1880 a Government pension of £100 was awarded him. The remainder of his days were spent with his family at Kew, one of whom, Mr. F. W. Fitch, carries on his father's work as a lithographer, in which connection his nephew, Mr. J. N. Fitch, is also well known. He died, after a long and trying illness, on Jan. 14th, and was buried at Kew. His name was commemorated in 1845 in *Fitchia* Hook. f., a handsome genus of *Compositæ*. He became F.L.S. in 1857.

The value of Fitch's work appears to us to consist in that skill in "seizing the natural characters of plants" to which Sir Joseph Hooker referred more than forty years ago. He had also a keen sense of form, and the arrangement of the leaves in most of his plates would be in itself a lesson to a young botanical artist: his colour appears to us less satisfactory. He himself thought that his gifts lay rather in the direction of landscape, in which few were found to agree with him; and to this, as well as to the production of coloured sketches of a mildly humorous kind, he devoted some time. The originals of the drawings of the *Botanical Magazine* are in the Kew Herbarium.

For the use of the accompanying portrait, which appeared in the *Gardeners' Magazine*, we are indebted to Messrs. W. H. Collingridge & Son.

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# OBSERVATIONS ON BRITISH MARINE ALGÆ.

By R. J. Harvey Gibson, M.A., F.L.S.

In the *Annals of Botany* dated November, 1891, Messrs. Holmes and Batters add an appendix to their 'Revised List of British Marine Algæ,' in which they give a list of desiderata which will be useful to those who, like myself, have opportunities of observing seaweeds at different seasons of the year. The following notes, though disconnected, may be of interest to algologists as illustrating points which have hitherto escaped notice, or have been insufficiently attended to in the morphology and physiology of Marine Algæ.

## I.—Antheridia of Polysiphonia elongella Harv.

The antheridia of this fairly common species have, according to Holmes and Batters, not hitherto been seen. Material which I collected in August of last year at Connel Ferry, near Oban, N.B., I found to bear antheridia. These appear to be of the type characteristic of the genus. They are elongated ovoid bodies arising

irregularly from the terminal joints of the finer branches. They are borne on bicellular pedicels, and are accompanied by a branched hair which arises from the distal cell of the pedicel.

## II.—Escape and Conjugation of Zoogametes in Enteromorpha compressa Grev.

Whilst examining some fresh material of *E. compressa* for the smaller green algæ often entangled with it, I noticed that one of the plants was giving origin to zoogametes. I spent some hours in watching the whole process from the origin of the gametes to conjugation. Although conjugation of zoogametes has been observed in the *Chlorophyceæ* by Areschoug, Derbes and Solier, Thuret and Bornet, Reinke, and others, the following notes may be of some value as being *continuous* observations on the zoogametes found in one cell. In the specimen I watched, the actual escape of each of the gametes took from five to fifteen minutes, and the gametes escaped singly. The swarming lasted about two hours, whilst actual conjugation appeared to require certainly over one hour. I was unable to watch the further history of the gametes owing to the lack of daylight. The first stage in the formation of gametes is the aggregation of the chlorophyllaceous contents to one side (lateral wall) of the cell. Later the contents take up a central position, and have the chlorophyll condensed in the middle, and surrounded by a colourless layer of protoplasm. Division then occurs into eight rounded masses, the young zoogametes. Absorption of the outer end wall of the mother cell (sporangium) then takes place, though this does not happen for some time after division is complete. It would be interesting to know what causes this absorption, and I hope in a future note to refer again to the question. The gametes escape one at a time through the aperture whose diameter is less than that of the gamete, for the latter can be readily seen to be constricted by the edges of the aperture. The green end of the gamete in all cases is first extruded, and a curious wriggling motion then ensues, lasting from five to fifteen minutes, until at length the gamete frees itself and escapes. The gametes at once assume a pear-shaped form, with a colourless pointed apex, near which are inserted two long and delicate cilia. The pointed end is the anterior one in all subsequent movements. After swarming for from one to two hours, some of the gametes approach each other in pairs. The approximation of two gametes I found did not by any means entail their subsequent conjugation. In many cases I watched two gametes from the *same* cell circle round each other at great speed, and then dash off to renew the process with other gametes from other cells. When fusion actually did take place, the pointed ends coalesced first and then the bodies, and finally the cilia were drawn in. I also selected a favourable specimen which showed signs of gamete formation, and placed it in a glass tube filled with fresh sea-water. One half of the tube I covered with black paper; the other half was left bare. Taking care to keep the water constantly fresh, and approximately of the same density, I found that after three days the fronds which lay in the exposed part of the tube had formed zoogametes which were

swarming in the water, whilst the cells of those fronds which were protected from sunlight by the black paper were still in the undivided condition. I tried experiments with coloured papers of various tints, but refrain from publishing the results of these experiments until I have had, during the coming summer, an opportunity of working out the subject more systematically.

## III.—Development of Spores of British Marine Species of Chantransia.

Whilst examining some *Callithamnieæ* collected in Plymouth Bay in the autumn of 1889, by my friend Prof. Johnson, of Dublin, I came across several plants of *Ceramium rubrum* covered with *Chantransia corymbifera* Thur. On the same host plants I observed a large number of small creeping plants which, owing to the fact that the material was quite colourless (having been preserved in strong spirit), I at first took for a species allied to *Acrochæte repens* Pringsh. On sending a specimen to Mr. E. A. L. Batters, he, however, at once diagnosed the plant as young stages of *Chantransia corymbifera*, and suggested that I should compare the young stages of this form with other species of the genus. (I may remark in passing that the adult filaments bore cystocarpia, which, Mr. Batters informs me, have only once before been seen in Britain, *viz.*, by himself at Sidmouth.)

The British species of *Chantransia* are, according to Holmes and Batters, five in number, viz., *C. Daviesii*, *C. corymbifera*, *C. virgatula*, *C. secundata*, and *C. luxurians*. I have examined the young stages of all of these, and made the following notes on them. The monospore in all, save *C. corymbifera*, forms, by division, a disc as a preliminary to the formation of erect fronds, whilst in *C. corymbifera* the spore at once gives rise to creeping filaments, each terminated by a long colourless trichome. Trichomata, so far as I can make out, do not seem to be formed in the other species until a later period. Waiving the question of the specific distinctness of *C. virgatula*, *C. Daviesii*, and *C. luxurians* (and I find it very difficult to separate these from one another in certain stages of growth), it may be noted that *C. virgatula* and *C. luxurians* agree in forming from the spore a discoid expansion one layer thick, from almost all save the marginal cells of which arise the erect branched filaments. *C. secundata* also forms a disc by division of the spore,* but the disc is more extensive, and relatively few erect filaments are at first formed. *C. Daviesii*, on the other hand, has a more massive disc, two or even three cells thick, and erect filaments arise from nearly all the cells. These four species then seem to form a series, so far at least as their young stages are concerned, *C. virgatula* and *C. luxurians* having the simplest type of disc, *C. Daviesii* the most complex and massive, with *C. secundata* as an intermediate type. *C. corymbifera*, on the other hand, does not form a disc; the spores give rise to creeping filaments, which branch and finally curve upwards, each terminated by a colourless trichome, absent from young filaments of other species.

(To be continued.)

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* See Murray & Barton in Journ. Linn. Soc. (Bot.), vol. xxviii. p. 212, footno

# ADDITIONS TO THE WILTS FLORA, 1891.

By the Rev. T. A. Preston.

The following have come to my knowledge during the past year. Some others, noticed, but not mentioned previously, are added, as being new to Wilts North or Wilts South. All localities not otherwise specified are on the authority of E. J. Tatum, Esq.

*Hypericum hircinum* L. 8. South Newton, *Hussey*. — **Oxalis corymbosa* DC. 1. Plentifully naturalised in Dilton Marsh, and in Chalcot Park, close by, *A. C. Smith*.—*Rubus suberectus* Anders. 11. Stourton Woods, near the Convent, *Murray*. — *R. Drejeri* G. Jensen. 8. Southley Wood (fide *Focke*). — *R. Lindleianus* Lees. 5. Redlynch, *Rogers*; Grimstead. 9. Compton. 10. Downton, *Rogers*; Alderbury (new to Wilts South). — *R. rhamnifolius* W. & N. 2. Langley Fitzurse, *Clarke*. 5. Redlynch, *Rogers*; Grimstead and Whiteparish. 10. Downton, *Rogers*; Alderbury. 11. Sedgehill (new to Wilts South). — *R. pubescens* W. & N. 5. Redlynch (new to Wilts South).—*R. villicaulis* Koehl. 5. Redlynch (new to Wilts South). — *R. Maassii* Focke. 8. Southley Wood, *Clarke & Tatum*. 9. Compton (new to Wilts South). — *R. echinatus* Lindl. 1. Dilton Marsh, *Clarke & Tatum*. 2. Bowood and Chippenham, *Clarke*; Midford, *Rogers*. 3. Liddiard Millicent, *Clarke*. 5. Clarendon. 7. Alton Barnes, *F. Rogers*. 9. Dinton and Southley Wood. 10. Race Plain. 11. East Knoyle (new to Wilts South). — *R. Radula* Weihe. 2. Near Kingsdown, *Clarke*. 5. Redlynch, *Rogers*; Plaitford. 6. Wilbury. 9. Hurdcott. 10. Downton, *Rogers*; Alderbury (new to Wilts South). — *R. Koehleri* Weihe. 5. Grimstead and Whiteparish. 11. East Knoyle (new to Wilts South). — Var. *pallidus* Bab. 2. Chippenham, *Rogers*. 11. Sedgehill (new to Wilts South). — *R. diversifolius* Lindl. 2. Chippenham, *Clarke*; Corsham, Langley Fitzurse and Box, *Rogers*. 5. Redlynch. 6. Wilbury. 7. Durnford. 9. Semley (common), *Rogers*. 10. Downton, *Rogers*; Harnham. 11. East Knoyle (new to Wilts South). — *Fragaria elatior* Ehrh. 5. Farley, *B. Parsons*. —*Rosa canina* var. *tomentella* Leman. 2. Corsham and Ditteridge, *Rogers*; near Chippenham, *Clarke*. 4. Marlborough, *F. Rogers*. 6. Allington. 7. Alton Barnes, *F. Rogers* (new to Wilts South). — *Pyrus Malus* var. *mitis* Wallr. 5. Hamptworth. 7. Old Sarum (new to Wilts South).—*Parnassia palustris* L. 2. Dauntsey, *Hussey*. —*Callitriche obtusangula* Le Gall. 2. Calstone, *F. Rogers*. 7. Stratford. 8. Heytesbury. 10. Harnham and Alderbury. 11. Sedgehill (new to Wilts South).—*Carum Carui* L. 4. Poulton, near Marlborough, *Meyrick* (new to Wilts North); a very luxuriant specimen, probably only a casual.—*Caucalis Daucoides* L. 7. Salisbury, *H. Wheeler* (new to Wilts South).

*Carduus pycnocephalus* Jacq. 6. Petersfinger. 7. St. Ann's Hill, *R. Howard* (new to Wilts South). — *Cnicus tuberosus* Hoffm. 11. Mere Down, *Galpin*, 1889 (fide *Murray*). — *Hieracium tridentatum* Fr. 1. Longleat, *Clarke & Tatum*. 5. Redlynch, *Rogers*; Grimstead. 10. Alderbury (new to Wilts North).—*Cuscuta europæa*

var. *nefrens*. 2. Clyffe Pypard, *E. H. Goddard*. — *Melampyrum pratense* var. *latifolium* Syme. 5. Redlynch (new to Wilts South).— *Mentha hirsuta* var. δ. Trimmer. 5. Grimstead. — *M. arvensis* var. *præcox* Sole. 5. Whiteparish. — *Thymus Chamædrys* Fr. 2. Calstone and Midford, *Rogers*; Kingsdown and Box, *Clarke*. 4. Savernake, *Rogers*. 6. Wilbury and Ford. 7. Old Sarum. 8. Groveley Wood. 10. Alderbury and Odstock. 11. Mere Down, *Murray* (new to Wilts South).

*Chenopodium polyspermum* L. 5. Hamptworth. 6. Clarendon (new to Wilts South). — *Atriplex hastata* L. 1. Westbury. 2. Corsham, *Rogers*. 5. Redlynch. 9. Semley, *Rogers* (new to Wilts South). — *Rumex sanguineus* L. 5. Hamptworth and Whiteparish. 10. Alderbury (new to Wilts South).—*Salix cinerea* L., androgynous form. Grimstead.—*S. repens* var. *parvifolia* Sm. 5. Grimstead.

*Juncus supinus* Moench. 1. Longleat (new to Wilts North). — *Scirpus setaceus* L. 5. Hamptworth. 10. Alderbury (new to Wilts South).—*Carex binervis* Sm. 1. Longleat, *Clarke & Tutum*. 5. Grimstead, Hamptworth, Landford. — *Avena sativa* L., awnless var. (fide *Baker*). 6. Allington. — *Bromus mollis* var. *interrupta* Haeckel. 6. Allington.

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## *EPILOBIUM DURIÆI*: A REJOINDER.

By the Rev. E. S. Marshall, M.A., F.L.S.

Mr. Clarke's reply (pp. 78–81) to my previous remarks seems to demand some comment from me. My chief object in approaching this subject was to try and prevent a common enough state of our *E. montanum* from masquerading in the guise of the Continental *E. Duriæi*, which I again very decidedly affirm to be a distinct, though certainly an allied, plant.

The stolons of *E. Duriæi* are, I repeat, if not precisely identical with those of *alsinefolium* (perhaps a slight exaggeration), at any rate much nearer to it than to any state of *montanum*. The resemblance to *Duriæi* in the "*forma minor aprica*" of the last-named species is merely superficial, and at once disappears under culture in an ordinary garden-border; whereas, in the true *E. Duriæi*, the character chiefly relied on is a permanent one.

I did not state that the *inflorescence* of *Duriæi* was simple, but the *stem*; thereby intending the leaf-bearing part of the plant, between the rootstock and the panicle. The word is so used by Haussknecht, and I believe also by many other authors. The panicle, moreover, bears but *one* basal branch, in Barbey's figure; but I agree that this point is a minor one.

Everybody is, of course, at liberty to form his own conception of what a "species" should mean. Some will reduce *E. Duriæi*, *collinum*, *hypericifolium*, and *lanceolatum* to varieties under *E. montanum*. I am of a different opinion, as all of them have marked structural and physiological characters of their own, stand the test of prolonged cultivation, and come true from seed. Also,

quite apart from my own strong belief that *E. Duriæi* is entitled to specific rank, it seems to me far safer to follow Gay, Barbey, and others who have seen and studied the *growing* plant of the Pyrenees, rather than any botanist, however distinguished, who bases his opinion of it on *herbarium* study. Personally, I am almost as sceptical about the existence of *permanent* varieties in this genus as Mr. Clarke is about the occurrence of hybrids.

Has Mr. Clarke read those parts of Haussknecht's book which are written in German? If so, I wonder at his questioning its great ability and general accuracy, at any rate so far as the European part is concerned. There are some errors; but what monographer ever managed to avoid them altogether? The more I have studied our English forms, the more I have been struck by Haussknecht's masterly grasp and acumen.

With regard to the hybrid question, I must demur to Mr. Clarke's description of the plan of diagnosis followed, which is caricature, pure and simple.

In some genera, hybrids are, I fully believe, rare or non-existent; in some, e. g. *Salix* and *Epilobium*, I have no more doubt about their frequency than about the fact that two and two make four. In conversation with myself, Mr. Clarke has admitted that they occur between the willows; why, with no better reasons than those adduced, is he so positive that there is no such thing, among the willow-herbs? In point of fact, both cases rest on the same kind of proof. What Wichura did with *Salix*, Focke has done (on a smaller scale) with *Epilobium;* i. e., he has produced hybrids, similar to alleged natural hybrids, by artificial cross-fertilisation.

I by no means take it for granted that all seemingly intermediate plants are bastards. These may be known by their total (or almost total) sterility; I understand, also, that their pollen is mostly abortive, but have not proved this by microscopical experiments. I have, however, cultivated several of these intermediates for two or three seasons in succession; among others, *lanceolatum* × *obscurum*, *lanceolatum* × *montanum*, *obscurum* × *parviflorum*, and *parviflorum* × *roseum*. They have thoroughly retained their peculiar characters, and none of them, so far as I have noticed, has ever produced perfect seeds; whereas the parent species fruit freely, and seedlings spring up all over the place. In 1890, I collected, on or near Ben More of Assynt, plants which Haussknecht agreed with me in naming *alsinefolium* × *anagallidifolium*, *alsinefolium* × *palustre*, and *anagallidifolium* × *obscurum;* in each case, associated with the species in question. Specimens of all three were sent home to grow, and I watched their development from time to time during the following autumn, spring, and summer. In every case the stolon-characters were about intermediate between those of the parents; and, although the *facies* was considerably modified by the changed conditions of growth, their origin was even more markedly evident than before. They all remained perfectly barren; whereas *E. alsinefolium*, *E. anagallidifolium*, and *E. palustre*, grown near them for purposes of comparison, produced normal capsules and (apparently) normal seeds.

I could furnish further particulars, but have said enough to show that the subject merits respectful treatment, and not contemptuous negation, unsupported by evidential facts. "*Sic volo, sic jubeo*," whatever else may be said for it, is quite out of place in scientific enquiries; and analogy is not proof. Mr. Clarke's interesting statement about the Andover forms of *Corylus* does not seem to call for any observations of mine.

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## AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

This is no more than it professes to be, an essay at a very difficult task, and I shall be content if it prepares the way for something better. My object is to confine myself, as far as possible, to such characters as are either essential or seem especially helpful for the determination of our species. For full descriptions in most cases the student is referred to those given by Prof. Babington in his *British Rubi*, his *Manual of British Botany*, and his supplementary "Notes" contributed to this Journal (1886, pp. 216, &c., 225, &c.; and 1887, pp. 20, &c., 327, &c.); and to Dr. Focke's *Synopsis Ruborum Germaniæ*, and his papers in this Journal (1890, pp. 97, &c., 129, &c., and 165, 166).

In the few instances where no help is to be derived from these sources, other references will generally be given, in addition to fuller details than usual in the "key." As will be readily seen on comparison, I am under great obligations to Prof. Babington's and Dr. Focke's works quoted above, and especially to the brief analytical tables in Dr. Focke's *Synopsis*.

By "prickles" and "leaves," those of the barren stem are meant in every case where it is not otherwise expressly stated. To economise space I have adopted the same abbreviations as occur in Prof. Babington's *Manual*, but have not thought it prudent to use any others.

It may not be out of place if I add here that as the preparation of this "key" was undertaken at the urgent request of a diligent student of brambles, so the utmost I hope for it is that it may prove a preliminary help to *students*, furnishing some of them with an easier entrance into the path of study. In such a genus as *Rubus*, at all events, there is no "short cut" to real knowledge, nor any possibility of acquiring it mainly through the labours of another.

Section I. Frutescentes.—Stem shrubby. Stipules attached to the petiole. Fl. panicled or racemose. Receptacle conical.

Subsection I. Idæi.—Stems suberect, never rooting at end; biennial. *Ripe fruit separating from its receptacle.* L. often pinnate.

1. R. Idæus L.—St. erect, nodding at the top, round, pruinose. Prickles setaceous, straight. L. 5-pinnate or ternate, or rarely 7-pinnate. Term. lt. long-stalked. Wood-borders and thickets.

b. Leesii (Bab.).—L. ternate. Lts. all roundly ovate, subsessile, imbricate. Pan. l. mostly simple, cordate, slightly 3-lobed, very coarsely crenate-serrate.

c. rotundifolius Bab.—"L. like those of var. b., but term. lt. long-stalked. L. of fl.-shoots similar, but upper ones simple." I have not seen this var.

Subsection II. Fruticosi.—Stems seldom suberect, often rooting at end; biennial or subperennial. *Ripe fruit not separating from its receptacle.* L. never strictly pinnate; but digitate, pedate, ternate, or rarely septenate-pinnate.

Group 1. Suberecti.—Stems usually suberect and (except in *nitidus* and *affinis*) very rarely rooting in autumn, glabrous or very slightly hairy. No stalked glands. Prickles equal or very nearly so. Sep. white-felted within, externally greenish, with white margin.

A. Prickles subulate or conical. L. frequently 7-nate. Spe. patent. Fr. dark red.

2. R. fissus Lindl. — St. bluntly angular above, round below, bright red in exposure, usually short. Prickles many, not confined to angles, all subulate, with very small slightly dilated base. L. rather thick and plicate (except in deep shade), much divided, often with broadly triangular-pointed term. lt. Bas. lts. sessile. Pan. very small. Stam. about equalling styles. St. (when its suberect habit is not taken into account) somewhat resembling that of *R. cæsius*. Thickets, especially in the North and in hilly districts.

3. R. suberectus Anders.—St. often acutely angled and sulcate above, tall. Prickles few (or none), confined to the angles, shorter than in *R. fissus*, conical, with rather long compressed base. L. plane, thin, large, often 7-nate. Term. lt. cordate-ovate, gradually acuminate. Bas. lts. subsessile. Pan. and fl. variable in size. Stam. exceeding styles. Damp thickets.

B. Prickles compressed, usually with large dilated compressed base. L. very rarely 7-nate (except in *ammobius* and *affinis*). Sep. patent or reflexed. Fr. black.

a. Sep. patent in fruit (usually).

(1) *Stam. falling short of styles.*

4. R. plicatus W. & N. — Prickles strongly falcate or deflexed, with large bases. Adult l. plicate, with coarse double and sometimes lobate-serrate teeth, green and hairy on both sides. Term. lt. broadly ovate-cordate, and more or less acuminate. *Bas. lts. subsessile in summer* (except in wet places). Stipules linear. Pan. typically racemose, nearly unarmed, or with prickles like those on the stem. Pet. usually large, obovate. *Stam. nearly equalling styles.* Sep. unarmed, dark green externally, with long points. Very variable.

b. HEMISTEMON (P. J. Muell.). — Adult l. hardly plicate, irregularly dentate, paler and hairier than in *plicatus*. *Lts. oval, with long acuminate points;* bas. shortly petioled. Stipules filiform, ciliate. Stam. variable in length, but usually falling considerably short of the greenish styles. Pet. oval, white. Sep. partly clasping fruit. Heaths and commons.

(2) *Stam. exceeding styles.* Bas. lts. already in summer briefly but distinctly petioled.

5. R. NITIDUS W. & N.—Prickles nearly straight, much compressed, with small bases. Adult l. plane, irregularly serrate-dentate, bright green and shining above. Lts. narrower than in *plicatus;* term. oval or elliptic, acute; *bas. distinctly stalked.* Stipules very narrow. Pet. oval. Cal. sometimes armed. When quite typical (as I have seen it in Surrey and Hants, and from N. Wales), the pan. is rather broad, with many nearly patent branches, crowded uniform strongly hooked prickles, quite green sep. and rather small bright pink pet. (the *R. hamulosus* Lefr. & Muell. having white ones); but this species is quite as variable as *plicatus*, though usually readily distinguishable from it by the leaf-characters and the long stamens.

b. ? INTEGRIBASIS (P. J. Muell.).—Prickles declining or deflexed, from oblong bases. L. opaque above, paler beneath. Lts. acuminate or cuspidate-acuminate, often obovate, with shallower teeth, and rather narrow entire or subcordate base. *Pan. narrower, and much less strongly armed*, with shorter declining or mixed prickles. Pet. pale pink, longer and narrower than in the type. Sep. greyish. Most of our British *nitidus* comes best under this var., which occasionally recalls some forms of the aggregate, *R. nemoralis* P. J. Muell. (*R. umbrosus* Auct. Angl.). In S.W. Surrey its place is taken by what seems an allied but much stronger form with very large fl., which grows abundantly on the same heaths and commons as the typical plant.

6. R. OPACUS Focke.—Prickles much compressed, declining, with long slender point. L. large, greyish, and felted beneath when young. Term. lt. cordate-ovate, very gradually tapering to a point. Pan. rather narrow, racemose above, with term. fl. nearly sessile, quite unarmed or with a few weak declining prickles. Like *R. nitidus* in its long stam. and stalked bas. lts., but recalling *R. plicatus* in its pan., and *R. affinis* in its term. lt. and prickles. In Focke's *Syn. R. G.* it follows *plicatus*, as being perhaps of hybrid origin ("*R. affinis* × *plicatus*?"). Heaths and commons (Derb., and several counties in the South).

b. Sep. reflexed in fruit. Stam. exceeding styles.

7. R. AMMOBIUS Focke. — Near *R. plicatus*, but with smaller prickles, larger l. not unfrequently 7-nate, and broader lts. plicate only when young and then usually grey beneath, larger fl., stam. slightly exceeding styles, and sep. reflexed in fruit. Believed to occur in Scotland. I have not seen it.

8. R. SULCATUS Vest. — St. sulcate throughout. Prickles few, strong, with large bases. L. all 5-nate. Bas. lts. stalked. Pan.

large in all its parts. Near *R. affinis* only in its reflexed sep. and black fruit; its nearest ally being *R. suberectus*, from which it is readily distinguished by the characters given above. Woods (Dev., Dors., Heref., Perth).

9. R. AFFINIS W. & N. — St. tall and remarkably suberect at first, though often rooting in the autumn, bluntly angular, glabrous. Prickles many, usually very long and narrow, straight or slightly declining (on pan. as well as on st.). L. rather narrow, occasionally 7-nate. Lts. wavy at edge, often imbricate and (especially when young) white-felted beneath; term. cordate-ovate, tapering almost from its base to the very acuminate point; bas. shortly stalked. Pan. compound, often leafy, and with somewhat cymose branches. A very marked and apparently widely distributed plant, especially in the South. The usual Dev. and E. Cornw. form (which I have not seen elsewhere) is lower growing, and has smaller broader l., with lts. more nearly equal to each other in size, and the term. one oval or elliptic. Bloxam's "*affinis*" seems quite indistinguishable from *R. villicaulis* Koehl. I do not understand vars. b. and c. of *Loud. Cat.*, ed. 8. Heaths and moors.

10. R. CARIENSIS Rip. & Genev, — Very near to *R. affinis*, of which it may prove only a var.; but it has much larger and broader l., more constantly white- or grey-felted beneath (especially in pan.), with large compound lobate-serrate teeth remarkably directed forwards, elliptic or broadly obovate term. lt., large leafy compound pan., and grey-felted sep. Abundant at Lynton and in two or three places near Holsworthy, Dev. Mr. J. W. White has sent me specimens of what I think may be the same from Somerset. Heaths, peaty places, and road-sides.

*R. nitidus*, *R. affinis*, and *R. Cariensis*, rightly placed, as I believe, among *Suberecti*, certainly make some approach towards the next group, *Rhamnifolii*.

Group 2. RHAMNIFOLII.—St. high-arching, often rooting at the end; glabrous, or with some scattered hairs (and then often becoming bald). Usually no stalked glands. Prickles usually confined to angles, and equal. L. 5-nate, or very rarely 7-nate. Sep. often white-margined as in Group 1, but always less conspicuously so, because greyer and felted. In our plants the sep. are reflexed in fruit (except in *carpinifolius* and *gratus*), and the stam. are longer than the styles (except in one form of *villicaulis*). They may be subdivided as follows:—

I. Term. lt. suborbicular, about twice as long as its petiolule, usually whitish-felted beneath.

N.B.—Felt, it must be remembered, is not to be expected on the l. of plants growing in shade.

(12) *Dumnoniensis*. (13) *rhamnifolius*. (14a) *? dumosus*. (14b) *pulcherrimus*. (25) *argentatus* (as it occurs plentifully in Herefordshire; but usually the term. lt. is ovate or elliptic).

II. Term. lt. ovate, elliptic, obovate or rhomboid, about thrice as long as its petiolule.

1. Green and hairy beneath, usually paler than above, but apparently never felted:—(11) *imbricatus*. (20) *gratus* (glabrescent). (21) *leucandrus*. (22) *hirtifolius* (very soft). (26) *ramosus* (Midlands). (27) *durescens* (hard). (28) *latifolius*.

2. As a rule only softly hairy and pale beneath, but occasionally felted:—(17) *carpinifolius*. (18) *rhombifolius*. (19) *villicaulis* (very rarely felted in English specimens). (23) *Lindleianus*.

3. As a rule distinctly felted beneath, though sometimes losing the felt late in the season, or under unfavourable conditions such as shade or smoky atmosphere:—(14 c) *Lindebergii*. (15) *incurvatus*. (16) *? montanus*. (24) *erythrinus*. (25) *argentatus*. (26) *ramosus* (Dev. & Cornw.).

The following notes may give some further help in subdividing this large group:—

A. Somewhat resembling Group 1 (Suberecti).

a. In habit, and in the nearly racemose pan., with patent fruit-sep.:—*carpinifolius*.

b. In the white-margined sep.:—*Dumnoniensis*, *nemoralis*, *carpinifolius*, *rhombifolius*, *gratus*, *leucandrus*, and *hirtifolius*.

c. In having occasional 7-nate l.:—*nemoralis* (frequently), and (rarely) *carpinifolius*, *villicaulis*, and *leucandrus*.

B. Approaching some of the later groups in having stalked glands.

a. On bracts only:—*? montanus* and *rhombifolius*.

b. On pan.-rachis and ped.:—*Dumnoniensis* (very short), *pulcherrimus* (in very variable quantity; sometimes with aciculi intermixed on pan. and st.), *villicaulis* (rarely), and *erythrinus* (especially var. *argenteus*).

11. R. imbricatus Hort.—St. arcuate-prostrate, remarkably branched "with many slender whip-like shoots," angular, dull red, nearly glabrous. Prickles short, stout, declining. *L. and lts. convex.* L. 5-nate, narrow, rather thin and wrinkled, green and hairy on both sides, opaque above, paler beneath. *Lts. usually imbricate*, cuspidate or cuspidate-acuminate, with double acute serrations; *term. roundish-obovate cordate; bas. exceptionally small. Pan. long, leafy*, usually rather narrow, *with long distant remarkably ascending racemose branches*, and upper l. often grey-felted beneath. Sep. abruptly cuspidate.

Near *R. affinis*, but readily distinguished from it by the above characters. Widely distributed in S.W. England, and occurring as far east as Surrey. Roadside hedges and wood borders.

12. R. Dumnoniensis Bab., *Journ. Bot.* 1890, pp. 338, 339.—*St.* arching, angular, furrowed, dark purple (on prickles and petioles also), *with many short crisp hairs*, which extend in plenty to the prickles. *Prickles many, remarkably long and slender, with short compressed base, chiefly quite patent, yellowish-tipped.* L. 5-nate. Lts. flat, dark green and hairy above, white- or grey-felted beneath, somewhat irregularly or doubly serrate; term. subrotund, with cuspidate or cuspidate-acuminate point, subcordate. *Pan. narrow*

cylindrical or subpyramidal, with ascending few-flowered branches, some (often a good many) very shortly stalked glands on the hairy (not felted) rachis, and long slender prickles. Sep. broad-based, cuspidate, greyish, with very narrow white margins. *Pet. large*, obovate or broadly elliptic, *milk-white*. Widely distributed.

In its prickles recalling *R. affinis*, but otherwise much nearer to *R. rhamnifolins*, of which possibly it may be only a strongly marked var. In some of the Yorkshire dales occurs in plenty what seems a small var. of this, with *lts. more finely toothed and wider apart* (owing to the great length of their very prickly petiolules), the *term. lt. more acnminate*, and much fewer glands on the pan.-rachis.

13. R. RHAMNIFOLIUS W. & N.—St. like that of *R. Dumnoniensis*, but almost or quite glabrous, comparatively bright red. *Prickles much fewer, declining*, broader-based, with long points. L. 5-nate. *Lts. more finely toothed, dark green* and slightly hairy *above, white-felted beneath; term. with remarkably long petiolule*, varying greatly in shape, but usually narrower and less abruptly cuspidate than in *R. Dumnoniensis* and *R. nemoralis*. *Pan. felted*, sometimes with a few sessile or all but sessile glands near the rather dense narrow blunt top, with many strong declining or deflexed prickles. Sep. grey. Pet. roundish, rather large, white.

This, the ordinary S. England form, differs somewhat from the typical *R. rhamnifolius* W. & N., as Dr. Focke has pointed out in *Journ. Bot.* 1890, pp. 101, 102, and is near his var. *stenoplos*; but the species, though seldom difficult to recognise, is variable with us. Hedges and wood-borders.

14. R. NEMORALIS P. J. Muell. *R. carpinifolius* Blox. — (In deference to Prof. Babington's opinion, I adopt this name for the aggregate species which has long been known amongst us as *R. umbrosus* Arrh.) St. of a duller red than in *R. rhamnifolius*, usually somewhat hairy. *L.* mostly smaller, somewhat convex, 5-nate or (except in var. *Lindebergii*) *rather frequently 7-nate*. *Lts.* usually more shortly stalked, and so closer together, most frequently subrotund-obovate-cuspidate and finely toothed, *much hairier and of a duller green* (*or greyish green*) *above*, green or felted beneath. Pan. usually laxer, longer and narrower, with falcate and declining prickles. Sep. greyish green, with narrow white margin. Pet. white or pink. Chiefly on commons and in other open sunny spots; but var. *pulcherrimus* also thrives in moderately shady places.

Dr. Focke has referred to the difficulty often experienced in distinguishing dried specimens of this from *R. rhamnifolius*. When fresh it wears a very different look, with its much duller colouring in st. and l., its smaller hairier and blunter lts., and (usually) its longer narrower pan., and stiffer habit.

a. *R. ? dumosus* Lefv. (*Journ. Bot.* 1890, p. 102). — Prickles equal, falcate or declining, from rather large bases. *Lts. dull green above*, rather velvety or slightly felted beneath; *term. subrotund or broadly obovate-cuspidate*. *Pan.* usually compound, *with slender declining prickles, eglandular*. *Pet. white* (or faintly pinkish), of moderate size, broadly obovate. One of the most abundant and

most generally distributed heathland plants in S. England. *R. Muenteri* Marss. (St. sulcate. L. green on both sides, and rather more coarsely serrate. Inflor. narrow) and *R. Maasii* Focke (St. quite glabrous, and sep. greener) seem hardly separable from it.

b. *R. pulcherrimus* Neum. *R. polyanthemus* Lindeb. (*Journ. Bot.* 1890, pp. 131, 166). — *Prickles* more numerous, *straight or slightly declining*, much compressed, *rather unequal and scattered;* occasionally with some aciculi and stalked glands intermixed. L. and lts. as in *R. ? dumosus*, but sometimes white-felted beneath. *Pan. with stalked glands* (especially on the bracts), and sometimes a few aciculi, besides the slender declining prickles. *Pet. small, bright pink, broadly elliptic or roundish, with very short claw.* Generally distributed, and by no means confined to open places. A bramble not easy to place; often (when not in flower) distinguished with difficulty from *dumosus*, at other times almost as strongly armed as some of the *Radulæ*.

c. *R. Lindebergii* P. J. Muell.—*St.* tall, arcuate-prostrate, *acute-angled, pale.* Prickles much as in *dumosus. L. all 5-nate. Lts.* rather small, distant, uniform, *acuminate and narrowing a good deal, though very gradually, from above the middle to the rounded or slightly emarginate base*, with formal simply-serrate outline; *grey-green above, grey-felted beneath. Pan.* long, narrow, eglandular, *with many strong falcate yellow prickles, and crowded short few-flowered branches. Fl. large and showy.* Pet. always white, obovate, tapering gradually into long claw. Fil. white, far exceeding greenish styles. A constant and strongly marked form; in the North (in hilly limestone districts, at all events) appearing (with *R. pulcherrimus*) to take the place of both *R. rhamnifolius* and *R. ? dumosus*.

15. R. INCURVATUS Bab. — St. arcuate-prostrate, angular and furrowed, dull red, rather hairy. Prickles many, strong, slightly declining from compressed triangular base. L. 5-nate. *Lts. lobate-dentate, very thick, remarkably concave from the upturned wavy edges*, shining and subglabrous above, *very softly greenish-white-felted beneath;* term. broadly ovate (or obovate) acuminate cordate. *Pan. long, narrow, with many short corymbose branches*, which as a rule are all (except the lowest two or three) remarkably patent. *Sep.* coloured like the under surface of the l., *with long acuminate points.* Pet. (broadly obovate), stam. and styles all pink. A beautiful and well-marked bramble. Hilly slopes, thickets and heaths, especially in the west.

(To be continued.)

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# ON THE SPECIFIC RANK OF *POTAMOGETON ZIZII*.

By Alfred Fryer.

Botanists who have made a critical study of *Potamogeton* have always greatly differed in their estimate of the natural relation *P. Zizii* bears to the other species of the genus, and have variously assigned it as a subspecies to two such widely different species as

*P. lucens* and *P. gramineus*. The earlier writers seem, with a few exceptions, to have regarded it as a variety or subspecies of *gramineus;* while Fries, and those who followed him, described it as a variety of *lucens;* and a few have, from its first discovery, accorded it full specific rank. These diverse views have led to much uncertainty in naming the more doubtful forms, and especially to a confusion of small states of *lucens* with true *Zizii*. This uncertainty is perhaps of little consequence in itself, but it has led to what I venture to think is a serious error—the arrangement of *P. gramineus* L. in the same natural group as *P. lucens*, or even to regarding it as a subspecies of the latter.

Until I began to suspect the hybrid origin of many of our accepted "species" of *Potamogeton*, I adopted this arrangement, although I found it a constant source of difficulty in attempting a natural arrangement of the broad-leaved forms of the genus; and that if the principles on which it was founded were consistently carried out, we must also place *P. natans* and *P. perfoliatus* as subspecies of one superspecies.

In studying a genus which is supposed to produce many hybrid forms, it is of the first importance to ascertain those which are termed "true species," that is, those produced by "evolution" or "direct creation." Unless we can do this with some degree of probability, our attempts towards a natural arrangement of the species can have no certain basis; and the wider question of hybridisation being one of the methods by which species, as we now know them, were formed can have no possible solution.

In this place I will not dwell on the possibility of plants of distinct species producing perfectly fertile hybrid offspring, but will refer the student to the ninth chapter of Darwin's *Origin of Species*, where the subject is most impartially discussed. The immediate object of this note is to detail the observations made in the field, rather than in the herbarium, and which have induced me to regard the typical forms of *P. Zizii* as more or less fertile hybrids between *P. lucens* and *P. gramineus* L. Other forms which are sometimes assigned to *Zizii* seem to be merely extreme states of *lucens*, or even of *heterophyllus auct.;* but these can only be worked out by botanists who have opportunities of studying them in a living state.

In the first place it is necessary to describe the fenland locality in which *P. Zizii* grows, and the probable means by which its supposed parents became established there; and then to relate such facts as I have been able to collect in support of the theory of the hybrid origin of this plant—a theory solely suggested by those facts, not one formed antecedently.

The fens of Cambridge and Huntingdon are not entirely covered with vegetable soil, but are here and there studded with slight elevations which rise a few feet above the surrounding level; in ancient times these were true islands rising from the water which then covered the vast extent now defined by the peat, which grew up as the water gradually diminished. These islands are masses of Oxford or Kimmeridge Clay (frequently capped with "Palæolithic"

and "Flora" gravels, or rarely with boulder clay) which resisted the successive denudations that formed the "fenland basin." As these islands are of small extent, with the exception of the Island of Ely, they possessed no rivers, and probably no water-courses, which did not become dried up in the summer. Hence such Potamogetons as grew on them previously to the separation from the mainland must soon become extinct; *P. crispus*, which is equally at home in the smallest cattle-pond or the largest river, alone excepted. This is at present the only species found on these elevations—locally termed "*high-lands*"; the surrounding peat being called *black*, or *fen* land.

As the fens became drier a series of moors and bogs were formed, alike around the base of the islands and at the foot of the mainlands which then formed the shores of the fenland lake. The vegetation of these moors is everywhere different from that of the "deep fens," which remained more or less submerged until comparatively recent times; and in making researches into the topographical botany of the district this should always be borne in mind. Cultivation has almost destroyed this moorland flora, but it may yet be seen at Wicken and Burwell on the mainland of Cambridge, and at Holme in Huntingdonshire. Traces of it exist around the islands also, and in nearly all cases it is marked by the presence of two Potamogetons, *heterophyllus* and *plantagineus*, which are not met with in the deep fens. These latter are tenanted by all the species which now inhabit the rivers which flow from the counties which surround the fens, but the two above-named plants are at present absent from rivers and deep fens alike, just as the moorland vegetation is absent.

*P. Zizii* is not found in the upland rivers of the two counties, nor in any of the moorland fens of the old mainland, but only near the islands, and then only where *P. heterophyllus* now grows, or in slightly outlying stations to which it was evidently carried by now disused systems of local drainage. This peculiar distribution first suggested the connection between the two species.

*Potamogeton lucens* grows almost everywhere in the fens, on moorland and deep fen alike; but, although our natural and artificial "rivers" often differ in no physical respect from the larger "drains" of the fens, no forms of *P. Zizii* are found in them. The river Potamogetons are *natans*, *lucens*, *prælongus*, *perfoliatus*, and *crispus*, with others which do not demand consideration in the present note; and it is not a little remarkable that although in some instances they seem perfectly adapted for the growth of both *heterophyllus* and *Zizii*, yet neither of these species is found in them.

When *P. heterophyllus* grows apart from *lucens*, no *Zizii* is to be met with, but whenever the two grow together, *Zizii* is always present! From whence did it come? I think the question is answered in what follows on the different *local races* of both species.

Recently, on comparing a large number of fenland and British *P. Zizii* with one another, I was surprised to find that, with one or two exceptions, each of the local races of this species differed to a

considerable extent. Setting aside such doubtful forms as *P. coriaceus* and *P. varians*, I found a distinct local type in each series; and although many of these local races varied to such an extent that they often closely approached *P. heterophyllus*, yet these varieties retained their local facies. Now I know that this variation in the fenland races could not in every instance be the result of differing local conditions, because many of them grew under exactly similar conditions; and further, because one of them, which I had cultivated in a small tub of water, retained its character for some years. I arrested the growth of this plant some times, and encouraged it at others, and so contrived to get as many *states* as possible; but in the end I found these *states* exactly corresponded with those of the same ages in the wild plant.

I then examined the fenland specimens of *P. gramineus* L. from the same localities, and found that they varied to some extent, and probably were not all true *gramineus*. In my note on this latter species, I touched on the fact that this species seems to divide itself naturally into two forms—the *graminifolius* and *heterophyllus* of Fries. Not to complicate this paper too much, I will confine myself to the one point of the difference between the forms of *Zizii* that grew with *graminifolius* and those that grew with *heterophyllus*. In the first place I found that the *Zizii* forms associated with *graminifolius* were all of one type; and although some of them approached that species very closely, yet no corresponding approach to *Zizii* was made by *graminifolius* itself—evidently the two forms did not cross *reciprocally*. In this locality the *Zizii* forms are quite away from the more usual fenland and southern forms, and show a decided approach to the northern type of the species.

The *Zizii* forms growing along with v. *heterophyllus* of Fries are much more varied, the coriaceous floating leaves are much more abundant, and the *heterophyllus* forms themselves often show a great resemblance to typical *Zizii* in some of their states. With little doubt these plants are reciprocally fertile. Probably *P. varians* is a second cross of *heterophyllus* with *Zizii*, a double-hybrid of like character to *P. coriaceus*. Here we are in the region of *mongrels*, plants that keep no constant character, but vary in a most perplexing manner; many seedlings differing considerably from their parent forms.

*P. Zizii* has one other character which strongly points to hybridity; it varies from a sterility so complete that even flower-spikes are never produced, up, by degrees, to a fertility equalling, in the individual fruiting spike, and exceeding in the number of spikes, that of *P. lucens*. That the sterility of some individuals is not due to unfavourable local conditions is proved by fertile and barren plants growing side by side. Some local *races* of *Zizii* are much more fertile than others; in some localities a barren plant is rarely to be met with; this is especially the case when a fertile colony is growing away from *P. gramineus* L., and is, perhaps, an indication that the fertility of hybrid Potamogetons is not increased by recrossing with one of the parents. Certainly the supposed double-hybrid *P. coriaceus* is very much less fertile than typical

*Zizii*. The totally barren race, before mentioned, grows under exceptionally favourable conditions for the production of flower-spikes, yet I have never been able to find a single one.

It would make this note too long to treat this subject from the *lucens* side of the question, and my observations are at present too incomplete for this purpose. The cause of the tendency of *Potamogeton* to cross so frequently in the fenland, while hybrid forms are so rare elsewhere, is a question which needs explanation, as, at first sight, it seems to offer a serious objection to the validity of much that I have urged in these notes. The explanation does not seem difficult, and I hope to attempt to give it in a future note.

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# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 85.)

**Sisymbrium Thalianum** Gay in Ann. Sc. Nat. vii. 399 (1826). **1634.** "Ad agrorum margines."—Johns. Merc. Bot. 59.

**S. officinale** Scop. Fl. Carn. ed. 2, ii. 26 (1772). **1597.** "In stony places among rubbish by pathwaies," &c.—Ger. 198.

**S. Sophia** L. Sp. Pl. 659 (1753). **1570.** "Prope urbes . . . Angliæ."—Lob. Adv. 329.

**S. Irio** L. Sp. Pl. 659 (1753). **1666.** "Ubique fere in Suburbiis Lond. supra muros & juxta fossas."—Merrett, 66.

**S. Alliaria** Scop. Fl. Carn. 2, ii. 26 (1772). **1538.** "Passim in sepibus."—Turn. Libellus.

**Erysimum cheiranthoides** L. Sp. Pl. 661 (1753). **1597.** "Wilde in sundry places of England."—Ger. 213. "About one mile from Redding."—How, Phyt. 19 (1650).

**Subularia aquatica** L. Sp. Pl. 642 (1753). **1692.** "A D. Sherard inventore ex Hiberniâ in Angliam nuperrime nobis transmissa est."—Pluk. Phyt. 188, f. 5. "Lough Neagh . . . D. Sherard."—Ray, Syn. ii. 281 (1696).

**Brassica oleracea** L. Sp. Pl. 667 (1753). **1548.** "Groweth in Dover cliffes, where as I have onely seene it in al my lyfe."—Turn. Names, B vj.

**B. Rapa** L. Sp. Pl. 666 (1753). **1640.** "I found going from Shorditch by Bednal Greene to Hackney."—Park. Theatr. 864.

**B. monensis** Huds. Fl. Angl. ii. 291 (1778). **1670.** "We found it plentifully, going from the Landing place at Ramsey (Isle of Man) to the Town."—Ray, Cat. 103, 4.

**B. nigra** Koch in Roehl. Deutschl. Fl. ed. 3, iv. 713 (1833). **1633.** "On the bankes about the backe of Old-street, and in the way to Islington."—Ger. em. 245.

**B. Sinapis** Vis. Fl. Dalmatica, iii. 136 (1852). **1548.** "Groweth comunely among the corne."—Turn. Names, D viij.

**B. alba** Boiss. Voy. ii. 39 (1845). **1633.** "On the banks

about the backe of Old street and in the way to Islington."—Ger. em. 245.

**Diplotaxis tenuifolia** DC. Syst. ii. 632 (1821). **1597.** "You may see most bricke and stone wals about London and elsewhere covered with it."—Ger. 192.

**D. muralis** DC. Syst. ii. 634 (1821). **1802.** "Growing wild abundantly on the pier at Ramsgate and other places thereabouts." —L. W. Dillwyn, 1801. Linn. Trans. vi. 389.

**Capsella Bursa-pastoris** Moench. Meth. 271 (1794). **1548.** "Groweth by high wayes, almost in every place."—Turn. Names, H ij.

**Senebiera pinnatifida** Poir. Dict. vii. 75 (1806). **1778.** "In ruderatis, circa Exeter, D. Newbery; circa Truro et Penryn in Cornubia."—Huds. ii. 280.

**S. Coronopus** Poir. Dict. vii. 76 (1806). **1597.** "In Touthill fielde neere unto Westminster; at Waltham twelve miles from London, and upon blacke Heath."—Ger. 347.

**Lepidium latifolium** L. Sp. Pl. 644 (1753). **1548.** "Groweth in Morpeth in Northumberlande by a water called Wanspeke."—Turn. Names, E j.

**L. ruderale** L. Sp. Pl. 645 (1753). **1597.** "In England in sundrie places wilde."—Ger. 206: but this is a doubtful record, as several species are included in this chapter which are not British. "In maritimis."—Johns. Merc. Bot. pars alt. p. 34 (1641).

**L. campestre** Br. in Ait. Hort. Kew. iv. 88 (1812). **1570.** "Provenit cultis et incultis arvis Angliæ."—Lob. Adv. 73.

**L. Smithii** Hook. Fl. Brit. 297 (1830). **1670.** "Thlaspi Vaccariæ incano folio perenne . . . In montosis Cambro-Britanniæ & alibi observavi."—Ray, Cat. 296.

**L. Draba** L. Sp. Pl. 645 (1753). **1830.** "Swansea, Mr. James Turner."—Hook. Fl. Brit. ed. 1, p. 297.

**Thlaspi arvense** L. Sp. Pl. 646 (1753). **1548.** "Plentuously besyde Syon," Middx.—Turn. Names. G vi. "In the corne fields between Croydon and Gods stone in Surrey," &c.—Ger. 206 (1597).

**T. perfoliatum** L. Sp. Pl. 641 (1753). **1688.** "Among the stone pits between Witney and Burford in Oxfordshire, D. Bobert." —Ray, Fasc. Stirp. Brit.

**T. alpestre** L. Sp. Pl. ed. 2, 903 (1762). **1666.** "In the pastures above the ebbing and flowing Well two miles from Giflewick [Giggleswick] . . . Yorkshire."—Merrett, 118.

**Iberis amara** L. Sp. Pl. 649 (1753). **1778.** "In arvis circa Henley et alibi comitatu Oxoniensi."—Huds. ii. 285. First found there in 1765 by a Revd. —. Williams.—Druce, Fl. Oxf. 34.

**Teesdalia nudicaulis** Br. in Ait. Hort. Kew. iv. 83 (1812). **1633.** "Mr. Bowles found [this] growing in Shropshire in the fields about Birch in the parish of Elesmere."—Ger. em. 250.

**Hutchinsia petræa** Br. in Ait. Hort. Kew. iv. 82 (1812). **1690.** "Brought me [Bobart] by Richard Kayle from S. Vincents Rock near Gorham's Chair, in the Parish of Henbury, three miles from Bristol."—Ray, Syn. i. 236.

**Isatis tinctoria** L. Sp. Pl. 670 (1753). **1597.** "The wilde

kinde groweth where the tame kinde hath been sowen."—Ger. 394. "New Barns near Ely."—Relhan, Fl. Cantab. 259 (1785).

**Crambe maritima** L. Sp. Pl. 671 (1753). **1551.** "Groweth at Dover harde by the sea syde."—Turn. i. 36 (90).

**Cakile maritima** Scop. Fl. Carn. ed. 2, ii. 35 (1772). **1570.** "Angliæ insulam meridionalem Vectim" [Isle of Wight].—Lob. Adv. 77.

**Raphanus Raphanistrum** L. Sp. Pl. 669 (1753). **1597.** "Upon the borders of banks and ditches cast up and in the borders of fields."—Ger. 186.

**R. maritimus** Sm. Eng. Bot. t. 1643 (1806). **1696.** "Mr. Stonestreet found it under the cliffs by the sea side, about half a mile westward of the fisher-houses at Bourne [Eastbourne] in Sussex."—Ray, Syn. ii. 342.

**Reseda lutea** L. Sp. Pl. 449 (1753). **1597.** "In sundrie places of Kent, as at Southfleete neere master Swanne's house upon longfielde downes."—Ger. 216.

**R. Luteola** L. Sp. Pl. 448 (1753). **1570.** "Locis . . . Angliæ ruderibus et semitibus occurrat."—Lob. Adv. 149.

**Helianthemum Breweri** Planch. in Journ. Bot. 1844, 618. **1778.** "Cistus guttatus . . . in monte Llech ddu prope Holyhead in insula Mona, D. Brewer."—Huds. ii. 232. Found by Samuel Brewer in 1726: see his MS. "Botanical Journey" in Bot. Dept. Brit. Mus.

**H marifolium** Mill. Dict. 2, 24 (1768). **1690.** "Found by Mr. Newton on some Rocks near Kendal in Westmorland."—Ray, Syn. i. 142.

**H. Chamæcistus** Mill. Dict. n. 1 (1768). **1570.** "Crescit . . . in Anglia."—Lob. Adv. 185. "In Kent, upon the chalkie banks about Graves ende, Southfleete, and for the most part all the way from thence unto Canterburie and Dover."—Ger. 1102.

**H. polifolium** Mill. Dict. n. 11 (1768). **1690.** "Found by the Doctor [Plukenet] upon Brent Downs in Somersetshire."—Ray, Syn. i. 142.

(To be continued.)

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## *SHORT NOTES.*

Rosa involuta Smith, var. Doniana (Woods) in E. Sussex.—Watson, in *Topographical Botany*, gives "Sussex, Borrer, Monog." for the aggregate species. Mr. Francis Dickinson, of Crockham Hill, has sent me a specimen of the above variety, exceedingly characteristic, from East Grinstead.—Edward S. Marshall.

Gentiana Amarella L., var. præcox Raf.—On p. 216 of his *Flora of Hampshire*, Mr. Townsend has written:—"The difference in the time of flowering between the type and this var. is remarkable. Possibly the plants have been browsed by sheep and rabbits in the previous year, and not having been exhausted by the production of

flowers and seed, have lived through the winter—are in fact biennial." This ingenious and attractive theory must, I fear, be rejected. Early in last spring the Rev. E. F. Linton showed me the Durlstone Head station for this plant, which we found to be springing up in seedling form, just like any other annual.—Edward S. Marshall.

Lowest Limit of Vaccinium Vitis-idæa in Ireland (p. 88).— In declining to accept Mr. H. C. Hart's estimate of 900 ft. as the lowest elevation, in Ireland, of *Vaccinium Vitis-idæa*, Mr. More is amply justified. Templeton's records of Lough Neagh and Crevetenant may be left out of the question, though there is every reason to accept them as correct, notwithstanding that the great decrease of heathy wastes in the northern counties renders modern confirmation improbable. In the *Flora of North-east Ireland* the range of this species is given as 500–2400 ft., the former limit referring to Rasharkin, in Co. Antrim, where I have known it for thirteen years. It there occupies two spots, one being under, and the other slightly exceeding, 500 ft. The late Admiral Jones found the plant in question near Drumquin, in Co. Tyrone. This record is not as definite as could be desired; but Drumquin is at an elevation of about 250 ft., and any ground which could properly be said to be near Drumquin ranges from 250 to 400 or 500 ft. In all likelihood the Tyrone station is as low or lower than the Rasharkin locality. —S. A. Stewart.

Sonchus palustris L. — I found two plants of this rare species in flower on 3rd August, 1889, in the reed-bed between the north-east corner of Woolwich Arsenal wall and the river. They were both fine specimens, seven or eight feet high, in full flower, and very characteristic. I think the plant may have been overlooked in recent years in the habitat which is mentioned by Boswell-Syme in *English Botany*, vol. iv., not that it is wanting in conspicuousness, but on account of the difficulty of getting on to the reed-bed. It is insulated, except at low tide, and then it is surrounded by a muddy ditch with slimy banks, which must be jumped standing. The reeds also are cut most years at about the time *S. palustris* would flower. I saw the same two plants again in 1890, but they were cut before flowering. I was unable to find them last year, though I could locate the spot almost exactly. My father has tried to establish foreign plants of this species by an artificial pond in private grounds in Cheshire, but they were all eaten by water-rats, who seem to be very fond of it.—A. H. Wolley Dod.

Trichomanes radicans in Co. Tyrone.—This plant was found last year by my brother, Mr. G. G. Delap, within five miles of Strabane, Co. Tyrone. The locality faces almost west, and is shaded from the sun. There appeared to be three large tufts or plants within a small area.—Alex. H. Delap.

## *NOTICES OF BOOKS.*

*Philosophical Notes on Botanical Subjects.* By E. Bonavia, M.D. 8vo, pp. v. 368, 160 figs. London: Eyre & Spottiswoode. Price 2s. 6d.

Since Mr. Grant Allen took to writing novels, and Messrs. Romanes, Geddes, Weismann, and Hartog have had their theories either changed at birth or otherwise blighted, there has been a period of repose during which one has been compelled to take one's Botany "neat." This state of affairs has not been without its compensations, but it is surely well that from time to time we should be roused from the sloth and stagnation of ideas that mere science breeds. Dr. Bonavia's *Philosophical Notes* stir up our formal notions of plant morphology in a way that has never been done before. No man living or that ever lived has taken more original views of this subject than Dr. Bonavia. He thinks it necessary to apologise for their publication. "The fact is that, in this stage of human existence, certain thoughts are often a great worry. One cannot get rid of them. They turn up by day, they turn up at night, they turn up in the morning, they haunt one at all times, and the only remedy for mitigating this worry of civilisation is to commit them to paper." The upshot of all this "worriting" in Dr. Bonavia's mind has been the publication of his *Notes* in the "endeavour to lay the foundation of a philosophy of plants," after removing the troubles and obscurities that encumber the subject, and "simplifying the conception of the living thing we call a plant." It does not seem to Dr. Bonavia "of much importance whether we call the student of plants a botanist, a horticulturist, or a goldsmith." This does not look like simplifying matters much, but then we must bear in mind that students of plants are frequently called harder names than these by all of us, without any tendency to simplify matters. After confessing that some of his speculations "may be still in the *nebular* stage of development," he exhorts the "reader who may think what I say is absurd, and not worth the paper it is printed on, to read the parts he thinks most absurd at *different times of the day*, for it is a well-known fact that in the morning we mentally see things which we do not see at midday; later on, after tea, we see differently from either before or after dinner, and so on." This is sound advice, for it is unfortunately true of many people that things seen clearly earlier in the day appear to them nebular after dinner. For example, "On one occasion I was talking of fruits and such things, and repeated the statement that they were all made out of sea-weeds. My listener jumped off his chair, in a fit of incredulity, took up his hat, and said, 'Good morning'!" Had the author chosen, instead of morning, a later period of the day, he might have earned a hearty acquiescence.

These pages are quite inadequate for giving even an outline of the startling theories set forth in this book. One view advanced is that the oil-glands of *Citrus* are "no other than remnants of

conceptacles or reproductive organs such as we find in seaweeds." This will stir up those botanists who speculate about "fasergrübchen," and recent writers about "the ancestors of the *Fucaceæ*" must take a back seat when they are taught to reflect "that the delightful orange has had a *Fucus* for a remote ancestor." The fig also comes from the same source, since "to the evolutionist no better example of homology can be found than between the receptacle of the fig and the conceptacle of the seaweed." This was perhaps seen "in a glass darkly" by those botanists who called the one *Fucus* and the other *Ficus*, as no doubt Dr. Bonavia would promptly admit. If there be not much in a name, there must be less in a mere letter; and one cannot help pausing to wonder at the narrow escape this view must have had from rushing on the mind of Linnæus, when in the *Genera Plantarum* he put *Ficus* last of the Flowering Plants, on the very page opposite the Cryptogamia. Speaking of *Citrus*, "In fine, I may here say that I have endeavoured to leave no opening for the reader, *if he has had the patience to read through this discussion*, to say that I have *not* taken *sufficient pains* to identify and homologise this 'blessed' orange-peel!" The italics are those of the author, who has certainly taken abundant pains, but the orange-peel remains a slippery matter, and the *Fucus* too.

So far as it can be gathered from this very remarkable production, Dr. Bonavia's central idea is that botanists have been blind to any view of the great unity of character in plants,—that the tendency has been to fix gulfs between the groups of plants rather than to bridge them over,—and that conventional morphology has a deal to answer for, as well as systematic botany. It may be that every one of us tends to get obstinate and prejudiced and Philistinic, and slow to recognise the need for revolutions. No one, we may be sure, is content to think of plant morphology that "it is all werry capital," as Mr. Weller put it on a memorable occasion; but even the youngest and most transcendental botanist is scarcely prepared to kick the whole thing over and start afresh in this fashion. Dr. Bonavia is beyond the reach of our humble arguments, and, so far as this Journal is concerned, he may draw a "bye."

Enough has been said to show the daring character of Dr. Bonavia's *Philosophical Notes*. There are some hard things quoted here against critics from the pen of "an earnest man, Andrew Lang." Without doubting the habitual earnestness of that distinguished writer, I wish to avoid the danger of meriting their application.

G. M.

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*Australasian Characeæ*. Described and figured by Otto Nordstedt. Part I. Large 4to. Lund, 1891.

The first part of this important work contains illustrations and descriptions (in English) of nine species and one subspecies, three of them, *Nitella partita*, *N. tumida*, and *Chara Leptopitys* subspecies *subebracteata*, being new, while several of the others had not previously been at all adequately described or figured. A plate is devoted to each species, and the descriptions are also printed on

separate sheets, so that the whole can be arranged in order on completion of the work. The plates contain life-sized figures of the plants, but the greater portion is occupied by much-magnified representations of the various parts, which, though sometimes somewhat conventional, give a good idea of the important characters. The descriptions are careful and concise. We are glad to see that the original name *Chara Braunii* has been reverted to, in place of the synonym *C. coronata* so often used. The introduction tells us that the work was begun with the help of Baron Ferd. von Mueller, and that its continuance will depend on the receipt of adequate material and the necessary time being available. The book is well printed, and the price (7s. per part) is very low. H. & J. G.

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## *ARTICLES IN JOURNALS.*

*Bot. Centralblatt.* (Nos. 8-13). — G. von Schlepegrell, 'Zur vergleichenden Anatomie der Tubifloren.' — P. Knuth, 'Blüthen-biologische Herbstbeobachtungen.'

*Bot. Gazette* (Feb. 15). — P. H. Rolfs, 'Seed-coats of *Malvaceæ*' (1 plate). — A. Carter, 'Evolution in methods of pollination.'— F. L. Scribner, 'Mt. Kataadn and its Flora.' — F. Stephani, '*Cryptomitrium tenerum* Austin.'

*Bot. Magazine* (Tokio: Feb. 10). — R. Yatabe, *Saxifraga Watanabei* (plate).—T. Makino, 'Notes on Japanese Plants.'

*Bot. Zeitung* (No. 8). — H. Solms-Laubach, 'Ueber die in den Kalksteinen des Kulm von Glätzisch-Falkenberg in Schlesien erhaltenen structurbietenden Pflanzenreste.' — (Nos. 9, 10). W. Burck, 'Ueber die Befruchtung der Aristolochia-Bluthe.'—(No. 10). R. Coesfeld, 'Zur Anatomie und Physiologie der Laubmoose.'

*Bull. Soc. Bot. France* (xxxviii: Comptes rendus, 6: March 1). —A. Franchet & G. Rouy, '*Myosotis bracteata* Rouy.' — A. Chatin, '*Terfezia Claveryi*.'— —. Boulay, 'Sur l'étude des *Rubus* en France.' —J. Constantin, '*Myxotrichum*.' — E. Bornet, 'Sur quelques *Ectocarpus*' (3 plates).—A. Chabert, 'Sur la Flore d'Algérie' (*Aronicum atlanticum*, *Pyrethrum Olivieri*, spp. nn.).—L. Legré, 'Additions à la Flore de la Provence.'—P. van Tieghem, 'Structure et affinités des *Abies*.' — P. Hariot, 'Flore Cryptogamique de la Terre de Feu' (*Gomontia arrhiza*, sp. n.).—D. Clos, 'Questions de Phytographie.'

*Bull. Torrey Bot. Club* (Jan.). — N. L. Britton, Rusby's S. American Plants (*Eupatorium thymifolium*, *Baccharis heterothalmoides*, spp. nn.). — B. D. Halsted, '*Monilia fructigena* and Spore Germination.' — J. B. Leiberg, '*Tripterocladium leucocladulum*.'— C. Macmillan, 'Development of Conidia-Beares in *Acrostalagmus*.'— Id., 'Some Duplicate Binomials.' — E. J. Hill, 'Host-plants of *Aphyllon fasciculatum*.'—(Feb.). H. Ries, 'N. American species of *Xyris*.' — B. D. Halsted, 'Eastern and Western Weeds.' — C. DeCandolle, 'Piperaceæ Bolivianæ' (*Piper psilophyllum*, *P. Mapirense*, *P. Rusbyi*, *P. oxyphyllum*, *Peperomia nudicaulis*, *P. Rusbyi*,

*P. Bangii*, spp. nn.).—(March). E. L. Gregory, 'Abnormal growth of *Spirogyra* Cells' (1 plate). — G. B. Sudworth, 'Names of two species of Rhus.' — T. A. Williams, 'Notes on Peronosporaceæ.'— B. D. Halsted, 'Parasitic Fungi as related to variegated Plants.'— S. B. Parish, 'New Californian Plants' (*Psoralea rigida*, *Opuntia Bernardina*, *Gilia maculata*. spp. nn.).

*Garden* (March 19).—*Streptocarpus Galpini* (plate).

*Gardeners' Chronicle* (Feb. 27).—*Dendrobium Obrienianum* Kranzl, sp. n.—(March 12). *Pelexia Travassorii* Rolfe, sp. n.—(March 19). *Trichodesma physaloides* (fig. 51).

*Journal de Botanique* (Feb. 1, 16; March 1). — G. Rouy, 'Sur quelques *Dianthus* de la flore française.'—(Feb. 1). E. Belzung, 'Sur divers principes issus de la germination.'—(Feb. 1–March 16). C. Sauvageau, 'Sur quelques Algues phéosporées parasites.'—(Feb. 1). G. Poirault, 'Germination tardive des spores de *Roestelia cancellata*.' (Feb. 16). N. Patouillard, *Leptobasidium*, n. gen. (Hymenomycetes). — G. Poirault, '*Ophioglossum vulgatum*.' — (March 1). J. Vesque, 'La tribu des Clusiées.' — (March 16). G. Camus, 'Monographie des Orchidées de France.'—P. Hariot, 'Des *Trentepohlia* des Indes néerlandaises.'

*Le Botaniste* (Feb. 15).—P. A. Dangeard, 'La nutrition animale des Péridiniens.' — Id., 'Les noyaux de *Merispomedia convoluta*.'— Id., 'Sur un Cryptomonas marin.'

*La Notarisia* (Dec. 31).—E. De Wildeman, 'Notes sur quelques algues' (2 plates). — A. Lemaire, 'Les Diatomées observées dans quelques lacs des Vosges.'

*Oesterr. Bot. Zeitschrift* (March).—A. Kerner, '*Rubus cancellatus*.' — J. Freyn, 'Plantæ novæ Orientales' (*Hedysarum candidum*, *Onobrychis fallax*, *O. insignis*, *Vicia variabilis*, spp. nn.).—R. v. Wettstein, 'Die Arten der Gattung *Gentiana* aus der Section *Endotricha*.' — H. Sabransky, 'Weitere Beiträge zur Brombeerenflora der Kleinen Karpathen' (*Rubus valligenus*, *R. clypeatus*, *R. macrocladus*, subspp. nn.).

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## *BOOK-NOTES, NEWS, &c.*

We are sorry to announce that, in consequence of not receiving the support upon which it had counted, the Matto Grosso Exploring Expedition, to which Mr. Spencer Moore was attached as botanist, has been obliged to return. The expedition, which started in August last, paid a short visit to the Chapada plateau, to the east of Cuyabá; after this it made its way to Santa Cruz, on the Alto Paraguay. During a stay of ten weeks at this place, the great forest to the north-west was penetrated, and the Campos de Tapirapuan were reached; an expedition was also made in a small stern-wheel boat up the Rio dos Bugres, and the Alto Paraguay was ascended as far as the neighbourhood of Diamantino. Mr. Moore brings back a fair collection of plants, including a number

of leaf-fungi; but the necessity of returning at the beginning of the rainy season, the best time for botanising, cannot be other than matter for regret.

The *Times* of March 22nd contains a leader on the *Kew Bulletin*, which, it appears, "is threatened with extinction." Viewed in the light of the notice in our last issue, the article is interesting reading. We there called attention to the increasing prominence given to strictly botanical matters in recent issues of the *Bulletin*, and we have reason to believe that it is intended to develop this portion of its contents. The article in the *Times* is written throughout in the exaggerated style of indiscriminate eulogy which seems by some to be thought necessary whenever Kew is spoken of. "No reasonable man can doubt that the publication of the *Bulletin* is one of the most useful functions discharged by an institution so useful to the community, and so creditable to the State as the Royal Gardens at Kew." The *Times* also says, "Its primary function is economical, and not scientific." But, as we have already pointed out, it is more and more neglecting this "primary function," and usurping that of a scientific journal. The enthusiastic leader-writer protests too much when he tries to make folk believe that the *Bulletin* is essential either to the interests of Kew or to the progress of science. The former did good work for forty-five years before the *Bulletin* came into existence; and abundant opportunities already exist for the publication of facts of either scientific or economic importance. The *Bulletin* is a serviceable adjunct to the work at Kew, and if its scope were restricted to its "primary function," it would be useful to a somewhat limited circle of investigators. But to treat the question as one of national importance is to introduce an element of farce into what is supposed to be a tragedy.

We learn from the March number of the *Bulletin* that the Royal Society of N. S. Wales has awarded the Clarke Memorial Medal to Dr. Dyer, who acknowledges its receipt in a characteristic letter. This, with the communication conferring the honour, is printed at length. The other contents of the number are mainly in accord with its "primary function." In the article on the sources of Rubber supply, reference is made to the Kew Report for 1880 for information concerning *Willughbeia* and *Leuconotis*. The names there published, however, were, as we then pointed out,* *nomina nuda;* and they have since been reduced or ignored in the *Flora of British India* †: the Editor of the *Bulletin* should not have omitted to mention this.

This publication of "nomina nuda," to which we have more than once referred lately, is a growing nuisance, and one which ought to be checked. A recent work—*Delagoa Bay*, by Mrs. Monteiro—contains a number of such names in various branches of natural history, including many plants. The offence against botanical canons is here aggravated, for (save in one instance) no indication is given that the plant is new, nor do we find any authority cited for them. Indeed, it was only after futile attempts to trace one of

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* *Journ. Bot.* 1881, 381. † See *Journ. Bot.* 1891, 124.

these names that we ascertained their true position. Some of the names are accompanied by little sketches, and it is likely that some botanical archæologist will one of these days claim that this constitutes publication. We understand that the plants in question were named by one of the Kew staff, and that the specimens are in the Herbarium there. If such be the case, we trust that those who are responsible for the management of that institution will take immediate steps to ensure the discontinuance of so inconvenient and mischievous a course of action.

The happy discovery of Dr. Britton that "*Coronopus Coronopus* (L.)" was the right name for the plant, on the principle of accepting the oldest specific name, although contemned by Prof. Greene, finds a warm defender in Mr. Conway Macmillan, in the January number of the Torrey Club's *Bulletin*. Prof. Greene sees in the duplication of names "a natural unfitness which all our sense of what is proper in nomenclature shrinks from." Mr. Macmillan, on the contrary, thinks it "so excellent that it will scarcely fail of universal adoption (after a season of recalcitrant objection)," and proceeds to take his part in the latest form of amusement by adding "*Taraxacum Taraxacum* (Linn.)," "*Oxycoccus Oxycoccus* (Linn.)," and two or three more to our bogus nomenclature. In the March *Bulletin* Mr. T. D. A. Cockerell takes a hand in the game, which seems likely to become popular in certain circles. "If the identical name for both genus and species is to be avoided," he says, "it is the genus that must go." Mr. Cockerell introduces a new move by writing "*Nasturtium nasturtium* (L.)," the second name being spelt with a small initial.

Sixteen of the sheets of drawings of Fungi, of which Mr. W. G. Smith gave some account in our February number, are now in their places in the public gallery of the Botanical Department, Natural History Museum. Mr. Smith was naturally precluded from saying anything about the manner in which he had executed his task, although every one who knows his work is aware of its excellence. We think, however, that even the mycologist will be surprised at the beauty of form and colour which these drawings display: and they are as accurate as they are beautiful. The Natural History Museum is to be congratulated on this important addition to its already attractive exhibits.

The first number of *Natural Science* corresponds pretty accurately with the anticipation we expressed of it last month, and its *raison d'être* is not very apparent. It is of course, like all Messrs. Macmillan's publications, admirably printed and "got up." Its most remarkable feature is the absence of any botanical paper, the one by Mr. Rendle, announced in the prospectus, being delayed until the April number. This seems to indicate that the (anonymous) Editor has not a very accurate sense of proportion.

Dr. M. C. Cooke announces in *Grevillea* for March that his connection with that journal will terminate with the next number, which will complete the twentieth volume. "Fickle health, increasing years, and diminished vigour" are assigned as the reasons

for this decision; but Dr. Cooke "stands open to any proposal" for transferring the magazine to other hands, so that it would be premature to announce its discontinuance.

The first fascicle of British Rubi (see p. 30) is now ready for distribution, as well as a similar series of British Characeæ, issued by the Messrs. Groves, containing 30 specimens,—price one guinea, carriage free,—for which application should be made to these gentlemen at 58, Jeffreys Road, Clapham Rise, S.W. We hope to notice both fascicles in our next issue.

We have received from Messrs. Cassell what seems likely to be a valuable addition to our works of reference in the first issue of *The Year-book of Science* (8vo, pp. lx. 473: 7*s.* 6*d.*). It is edited by Prof. Bonney, and the various branches of Science are undertaken by competent hands. In Botany, Mr. Hemsley is responsible for the Systematic and Geographical portion; Mr. Massee and Prof. Bower for Morphology and Biology; Dr. Scott for Minute Anatomy; Mr. Thomas Hick for Palæobotany; and Prof. F. W. Oliver and Mr. F. E. Weiss for Physiology. The selection of papers and books summarised is very good; but it seems to us that the contents of this Journal received somewhat scanty recognition. It is surely a little odd that Mr. T. Kirk's letter on the islands of the New Zealand group in the Linnean Society's *Journal* should be abstracted at some length, while no notice is taken of his contribution on the subject to our pages, in which new species are described. Mr. Scott Elliot's Cape novelties, Mr. Lister's valuable contribution to our knowledge of Mycetozoa, Mr. E. G. Baker's *Malvaceæ*, and Miss Barton's account of the Galls on *Rhodymenia*, are only some of the papers which demanded at least mention in such a summary as this. The volume is beautifully printed and well indexed (although we prefer one general index to separate enumerations of authors and subjects); misprints are few, the most important we have noticed being at the top of p. 409, where "forms" should be "ferns." Mr. Elliot's name is indexed under "Scott," and a hyphen, which the owner of the name does not employ, is intruded to justify this error.

The first instalment of the "Biographical List of British and Irish Botanists" (see p. 16) has been sent to press, and, although the work will probably not be completed by June, it is hoped that nothing will interfere with its steady progress and prompt issue. The additions, both of names and details, are more numerous than was expected, and the work will be extremely valuable for reference. Those wishing to obtain copies on subscribers' terms should communicate at once with Messrs. West, Newman & Co., 54, Hatton Garden, E.C. The subscription price is 3*s.* 9*d.* post free, but this will be considerably raised immediately on publication.

We regret to record the death of Prof. Sereno Watson, of Cambridge, which took place on March 11th. A notice of his work will appear in an early number of this Journal.

Errata.—P. 68, line 9 from top, for "Ealing," read "Easling"; line 30, for "Horlton," read "Harlton."

# FURTHER NOTES ON HIERACIA NEW TO BRITAIN.

By Frederick J. Hanbury, F.L.S.

In continuation of the short papers appearing in this Journal, vol. xxvi. p. 204, and vol. xxvii. p. 73, I will endeavour very briefly to summarise the result of further investigations of the genus *Hieracium* made during the last three years. I had hoped on the present occasion to have been able definitely to treat of all the forms which the patient work of many investigators has brought to light, and to have added a list of the British Hieracia systematically arranged and brought completely up to date. This idea, however, is of too ambitious a nature to carry out at the present moment, and to delay publishing the results already attained until finality is reached, might mean the almost indefinite withholding of information that may be of material assistance to many collectors during the coming summer. I shall hope before long to be able to supplement the present notes with further particulars on the forms still *sub judice*, and to add a systematic catalogue of the British Hieracia, complete so far as our present knowledge extends.

The districts visited during the summers of 1889, 1890, and 1891 were, for the most part, new ground to me. In the year 1889 I made my first acquaintance with the Great Doward and some of the hills of Central Wales, in company with the Rev. Augustin Ley, whose previous explorations and consequent knowledge of these parts greatly tended to the economy of our time. Later on I joined the Rev. E. S. Marshall in a tour among the mountains of Argyle and West Perth—Kingshouse, Inveroran, and Crianlarich being our centres of work. The following year I visited the Rev. W. H. Purchas, in whose company I had the advantage of exploring Dovedale for the first time, and of seeing growing several well-marked and interesting forms, with which, through his kindness, I had been familiar in the dried state for several years, and had also cultivated in the garden.

Later on I again joined the Rev. E. S. Marshall, this time on an expedition to West Sutherland, undertaken chiefly with a view of exploring the limestone around Inchnadamph. A day or two on the return journey was spent at Tain, in East Ross, followed by another visit to the Perthshire Hills, with Crianlarich as our centre. Last year's operations commenced with a visit to Cheddar, the interesting limestone flora of which is so well known to all, followed, after a short interval, by a visit to the somewhat similar country around Settle. Thanks to the hospitality of the Misses Thompson, and their intimate acquaintance with the whole of the surrounding country, it was here possible to accomplish much important work, and to clear up most of the puzzles that remained unsolved from previous visits to this extraordinary district.

From Settle I went direct to the West of Ireland, Sligo being selected as my first stopping place. A few days of unusually fine weather served for visits to Ben Bulben, Ben Weiskin, and other mountains of this range, after which I joined Mr. H. C. Hart in a

little tour among the beautiful mountains in South Donegal. Mr. Hart's thorough familiarity with this country and the continuance of fair weather made this trip a most successful one—agreeably ended by a day or two's rest at my companion's picturesque home on the western shore of Loch Swilly. The Mourne Mountains in Co. Down formed the next district to be examined. Here I was fortunate in having as a guide Mr. S. A. Stewart, whose botanical acquaintance with the N.E. of Ireland is known to all. The rocky bed of the Shimna river, in Tollymore Park, yielded several interesting species. Hilltown then became our head-quarters, whence several fruitful excursions were made, giving me the opportunity of studying *in situ* several forms which had been the subject of much previous correspondence. A few days near Bangor, in the company of Mr. J. E. Griffith, and then three more among the Carnarvonshire hills with the Rev. Augustin Ley, completed my personal explorations.

To particularise the large amount of local work accomplished by many valued correspondents in nearly every part of Great Britain and Ireland during the same period would be out of place here, and unduly lengthen my notes. I cannot, however, refrain from expressing my great indebtedness to my frequent companion and constant correspondent, the Rev. E. S. Marshall; to the Rev. Augustin Ley, for the expeditions he has made to nearly every part of Wales; to Mr. W. H. Beeby, for a very fine set of Shetland Hieracia; to the Revs. E. F. and W. R. Linton, for good work done in Dumfries, Forfar, and Aberdeen; to the Rev. H. E. Fox, for several valuable parcels of fresh Hieracia from the Lake District; to Dr. Buchanan White, for a very large collection of Perthshire specimens got together by himself and friends in connection with his forthcoming Flora of that county; to Mr. G. C. Druce, for specimens from Ross, Inverness, Banff, &c.; to Messrs. Hart, Levinge, More, Praeger, Scully, and Stewart, for Irish specimens; and to the Revs. W. H. Purchas and W. H. Painter, Messrs. H. and J. Groves, J. C. Melvill (to whom I am also indebted for some useful suggestions in nomenclature) and R. Kidston; to the Misses Thompson, and others.

One result of all this kind help has been to increase my own collection of the British Hieracia to the somewhat unwieldy bulk of about 4000 sheets, exclusive of the Backhouse and Boswell herbaria, which are kept separate, and thus unavoidably to hinder and delay my work, though I trust the ultimate outcome may be to make it more thorough and comprehensive in its character than could otherwise have have been possible. Once more I have to acknowledge the invaluable assistance of Dr. C. J. Lindeberg in looking through and making critical suggestions on some very large parcels transmitted to him; indeed, but few British forms remain which have not now passed through his hands.

Before proceeding to describe and name those forms which I believe to be new, it may be best to mention the following species and varieties, recognised on the Continent, that have been added to the British list since the appearance of my last notes in 1889; a few already published, others now made known for the first time.

HIERACIUM NIGRESCENS Willd. var. COMMUTATUM Lindeb. — From the eastern slopes of Cairn Toul, and probably other mountains in the Cairngorms.

H. NORVEGICUM Fr. var. CONFERTUM Lindeb. — From Glen Lyon, collected by Mr. W. F. Miller in 1888, and so named by Dr. Lindeberg from two stations. The Rev. E. S. Marshall collected the same plant in 1890 by a burn descending from Ben More (Perth), about two miles east of Crianlarich.

H. DIAPHANUM Fr. f. — A plant collected by Mr. J. C. Melvill at Prestwich, near Manchester, was so named by Dr. Lindeberg. The Lancashire specimen agrees well with No. 35, *Hierac. Scand. Exsicc.**

H. DIAPHANUM Fr. var. STENOLEPIS Lindeb.— Collected by the Rev. Augustin Ley in August, 1890, from the Northern Cliff of the Brecon Beacons; also from Craig Gledsian, both localities being in Breconshire. A very distinct form.

H. CÆSIO-MURORUM Lindeb.—First determined as a British plant from a specimen collected by the Rev. E. F. Linton at the Linn of Quoich, near Braemar, in 1889, and subsequently collected at several stations in Perthshire both by Dr. F. Buchanan White and the Rev. E. S. Marshall. Our specimens agree admirably with the type No. 59, *Hierac. Scand. Exsicc.*

H. PROTRACTUM Lindeb.—Collected during successive seasons by Mr. W. H. Beeby in several localities in Shetland; the specimens agree well with the type No. 40, *Hierac. Scand. Exsicc.* A very distinct and handsome species, apparently confined to the Shetlands, as far as Britain is concerned.

H. MURORUM L. pt. var. SAGITTATUM Lindeb. — Gathered from four distinct localities in Perthshire by Dr. F. Buchanan White, Mr. Marshall, and myself. Specimens have been seen and so determined by Dr. Lindeberg, and agree well with the type No. 58, *Hierac. Scand. Exsicc.*

H. ONOSMOIDES Fr. — First determined as British from specimens gathered at Braemar, where, however, the flowers seldom or never develop properly, the ligules remaining curled up and of a greenish colour. The same may be said of specimens gathered in Uig, Skye, by the Rev. W. R. Linton in 1888. I gathered my first specimens on rocks in the Clunie, in the middle of the village at Braemar, also by the Linns of Dee, in 1886, but, regarding them as abnormal, I did little with them until the Rev. E. F. Linton sent me similar specimens from the Sluggan in 1889. Some of these I sent to Dr. Lindeberg, who at once named them "H. onosmoides verum, v. paucifolius." It was not, however, till July, 1890, when the Rev. E. S. Marshall and I met with a luxuriant and well-developed *Hieracium* on the railway-bank at Tain, in East Ross, growing in great quantity, that really good specimens of this plant were found, and these were so luxuriant (some over four feet high) that they were

* I purposely omit quoting the paragraph on this plant appearing in the Rev. E. F. Linton's paper in the *Journal of Botany*, 1891, vol. xxix. p. 272, as I feel some doubt about the identity of the Prestwich and Longridge plants, and have not time to clear the question up before this paper goes to press.

not at first recognised. Last year Mr. Marshall again stayed at Tain, and collected fine and typical specimens on "Sandhills near Balintore, E. Ross, in profusion," which, though evidently the same as the plant that was gathered by the railway, were growing under more natural conditions; and these specimens are undistinguishable from the examples given in the *Hierac. Scand. Exsicc.* No. 32, and agree perfectly with the description in Fries' *Symbolæ*, p. 102. I believe Mr. Linton sent some of his Braemar specimens, with other plants, to Mons. Arvet-Touvet in the South of France, who referred them to his *H. buglossoides*. They do not appear to me, however, to agree nearly so well with my examples of Mons. Arvet-Touvet's plant as with those of *H. onosmoides* Fr., and I feel little doubt that the Braemar, Skye, and Tain specimens, though differing slightly, belong to one and the same species, and are all referable to Fries' plant; it is needless to add that plants collected from the North of Scotland are more likely to have affinity with Scandinavian types than with those occurring in the South of France.*

H. Friesii Htn. var. basifolium Lindeb. — A strongly-marked variety or form having at the base of the stem a rosette of rather large leaves, which are abruptly reduced upwards to quite small proportions, and become few and far between towards the apex. I have only gathered it myself by the Dee at Braemar. Remarkably fine and typical specimens have been distributed by the Messrs. Linton from the Clova Valley. These were marked by Dr. Lindeberg, "verum!" I have also specimens from Kincraig, Inverness, collected by Mr. A. Somerville; and from Spey Side, near Kingussie, collected by Mr. W. F. Miller. My experience of five years' cultivation of this form is that it tends to revert to the type, and to develop larger leaves in its upper portion.

H. reticulatum Lindeb.—This species was first gathered by Mr. Marshall and myself at Reay, Caithness, in July, 1886, but the plants were only in bud. A month later, the Rev. W. R. Linton gathered it in the same locality in flower, but unfortunately did not dry his specimens very carefully; all of these were the sandhill form of the plant, on which Dr. Lindeberg wrote, "Verisimile H. reticulatum vel species nova." The following year I gathered it again in fine condition on some low cliffs to the west of Reay Bay; these specimens differed somewhat from the sandhill form, and were again sent to Dr. Lindeberg, without reference to his

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* I ought perhaps to mention that I have not got the Braemar form growing in my garden, and am therefore as yet unable to compare specimens from both localities when cultivated under similar conditions. Should such cultivation prove that certain differentiating characters are permanent, it may be well to adopt Mons. Arvet-Touvet's name for the Braemar plant, though I should certainly be inclined to follow Nyman in placing it as a variety under *H. onosmoides* Fr. That Fries intended his species to include the South European form is shown by the fact that in his *Epicrisis*, p. 89, he gives as a locality, "*In Pyrenæis orientalibus* (Billot!), *norvegico simillimum* (*v. s. sp. et v. c.*)," whilst Mons. Arvet-Touvet, in *Les Hieracium des Alpes Françaises* (1888), p. 72, gives as a locality for his plant, "Dans les Pyrénées Orientales, &c.," and omits altogether to include *H. onosmoides* in his work, giving the points of difference between his own and Fries' species.

previous determination; on these he wrote, "Cum Hieracio reticulato nostro haud male convenit," adding that the British form appeared to run into *H. corymbosum*. I have no doubt the two species are closely associated. In 1889, Mr. W. F. Miller collected the Reay plant, but in a fresh locality, by a burn to the south of the road running parallel with the coast, and these specimens agreed more closely than any of the preceding with the type No. 147, *Hierac. Scand. Exsicc.* Again they went to Dr. Lindeberg without comment. "H. reticulatum var. involucro glabro. Confr. H. Sc. Exs. No. 147," was the reply. I give the above details at some length to justify the long interval occurring between the discovery of this species, six years ago, and its publication now.

H. PRÆLONGUM Lindeb.—Specimens of this species were collected by Dr. F. Buchanan White in August, 1885, from "Rock of Linn of Campsie, Perth." Mr. G. C. Druce also collected it in 1889, from Kinlochewe, W. Ross. Of these latter specimens Dr. Lindeberg writes, "H. prælongum var., at verum." Dr. White's specimens agree well with the type No. 42, *Hierac. Scand. Exsicc.*

H. ANGUSTATUM Lindeb.—The English Lake District appears as the first locality for this species. Specimens from a "ravine near Ennerdale, Cumberland," gathered on the 30th July, 1867, by Frederic Addison, were the first so named for me by Dr. Lindeberg. On July 27th, 1876, the Rev. Augustin Ley collected it from "Piers Gill, Scawfell Pikes, Cumberland." These specimens were seen at the time by Mr. J. G. Baker, who wrote, "*sylvaticum* nearing *gothicum*," showing that he did not consider it could be placed definitely under any of the then known British species. In August, 1888, the Rev. H. E. Fox sent it me growing, from Easedale, Westmoreland. These specimens Dr. Lindeberg returned as "*H. angustatum* (Cnfr. H. Sc. Exs. n. 64)," with a further note pointing out how the species differed from *H. vulgatum* Fr. I may here remark that in the *Hierac. Scand. Exsicc.* No. 64, the plant was first issued as a variety under *H. cæsium* Fr. Dr. Lindeberg has, however, altered this label with a pen in the sets more recently issued, and in Fasc. iii. No. 128, has issued a variety under the name "*H. angustatum* Lindeb. v. *elatum* m." This latter variety I gathered in August, 1888, from the rocky cliffs above Loch-na-Chait on Ben Lawers; and in 1889 the Rev. E. S. Marshall and I gathered it near Kingshouse, Argyle. The same year the Rev. E. F. Linton sent me specimens from the Unich Water, Clova, Forfar; also from alpine rocks on Craig-na-dalabeg, all of which I sent to Dr. Lindeberg for confirmation, who returned them as "*H. angustat.* f. Cnfr. H. Scand. Exs. 128." I have specimens from several other places differing slightly from the foregoing, but which must in all probability be eventually placed to this species; I refer especially to plants gathered on mountains near Killin and Tyndrum.

H. CINERASCENS Jord.—This name has been loosely associated with those of *H. lasiophyllum* Koch, and *H. Schmidtii* (or *pallidum*) var. *crinigerum* Fr., by many English botanists, as though the three were synonymous, and foreign specimens show that almost equal confusion exists on the Continent. Unfortunately I have not yet seen Jordan's type, so write with much diffidence on the subject.

But there can be no doubt that we have three very distinct plants in Britain, to which one or other of these names has usually been applied. Two of these forms have already been distinguished, I think beyond all doubt, and it is to the third, on Dr. Lindeberg's authority, that I now apply Jordan's name. The head-quarters of the plant in Britain are the limestone scars, dales and pavements of Yorkshire. I have repeatedly sent the plant to Dr. Lindeberg from these parts (a large *murorum*-like species with softly hairy, dark green, very entire and roundish root-leaves auricled at the base; stem-leaves absent except in rare instances, or where the panicle branches very low down); and these are his determinations received from time to time:—"H. cinerascens Jord. Fr. forma pedunculis periclinioque subglandulosis." "*H. cinerascens* Jord. f." On specimens circulated through the Botanical Exchange Club, under the name of *H. crinigerum* Fr., and which were collected by the Rev. W. R. Linton at Clova, in August, 1887, I made the note, "nearest *H. cinerascens* Jord., but peduncles hardly hairy enough." Mr. Backhouse had changed Mr. Linton's name to *H. lasiophyllum* Koch; but when I sent them to Scandinavia, Dr. Lindeberg returned them as "H. cinerascens verum f. minus glandulosa." I have a similar plant from "Falls of the Rogie, Strathpeffer, E. Ross, 1889," collected by Mr. H. T. Mennell. Specimens gathered by myself from clay cliffs by the Almond, Perthshire, in 1888, and though less robust closely resembling the Yorkshire form, were also placed to this species.

H. SUBMURORUM Lindeb.—This was collected in some quantity by the Rev. E. S. Marshall and myself, on the mountains round Kingshouse, Argyle, our specimens agreeing well with the type No. 112, *Hierac. Scand. Exsicc.*

Other forms that may be mentioned are *H. orarium* f. *lingulata*, and f. *stylosa*, from the banks of the Almond, Perthshire; "*H. Orarium* opt. var. *magis scapiforme*," from New Brighton, Cheshire, collected by the Rev. W. H. Purchas; *H. corymbosum* f. *angustifolia*, Linn of Campsie, Perth, July, 1874, collected by Dr. F. B. White. Mr. Backhouse had named this plant "*H. æstivum* Fr.," below which Dr. Lindeberg wrote, "Recte quidem! at Hierac. æstivum nil est nisi forma angustifolia Hieracii corymbosi. Hoc ergo: H. corymbosi, f. angustifolia." I purposely omit, for the present, reference to any of the named varieties of *H. umbellatum* Linn., or *H. commutatum* Beck. For the sake of making these notes as complete as possible, I append references to the descriptions of British Hieracia which have appeared since 1889.

H. HOLOPHYLLUM W. R. Linton.—*Journ. Bot.* 1890, vol. xxviii. p. 376.

H. ZETLANDICUM Beeby.—*Journ. Bot.* 1891, vol. xxix. pp. 243–4.

H. MARSHALLI Linton.—*Journ. Bot.* 1891, vol. xxix. p. 271.

H. PICTORUM Linton.—*Journ. Bot.* 1891, vol. xxix. p. 271–2.

H. ANFRACTIFORME Marshall. — *Journ. Bot.* 1892, vol. xxx. pp. 18–19. With regard to this last species, the name *H. anfractiforme* has already been used by Dr. Almquist, and Mr. Marshall will doubtless suggest another.

(To be continued.)

# A NOTE ON NOMENCLATURE.

By M. Alphonse DeCandolle.

Beaucoup de botanistes sont épouvantés par les changements que propose M. Kuntze dans les noms génériques. Quelques recherches déjà faites, et les réflexions qui se publient chaque jour sur les principes de la nomenclatures, peuvent cependant rassurer jusqu'à un certain point.

J'ai eu la curiosité de voir quels noms de genres M. K. prétend qu'on doit changer dans les 26 familles dont je me suis occupé soit pour le *Prodromus*, soit pour le premier volume de nos Monographiæ. Leur nombre est de vingt-huit. Or, après un examen attentif des raisons données par M. K., il se trouve que six noms seulement doivent être changés par une application de la loi de priorité bien-entendue, tandis que vingt-deux des changements sont inadmissibles. M. le Dr. Briquet, qui connait mieux que personne la famille des Labiées, a trouvé que sur 15 changements proposés par M. K. cinq seulement sont bien fondés et 10 ne sont pas admissibles.* D'après ces deux études, faites consciencieusement, il faut donc *reduire dès deux-tiers les changements proposés par M. Kuntze.*

Tout en rendant justice à l'érudition et à l'exactitude de ce savant, je dois dire quil y a plusieurs causes d'erreur dans ses déductions. Je citerai les deux plus importantes.

(*a*) M. K. prend pour des genres les noms, d'apparence génériques, qui ne sont accompagnés d'aucuns caractères propres à les faire comprendre. Un genre n'est constitué que par la réunion d'un nom et de caractères distinctifs. Sans cela c'est un genre mort-né. Il est nul, et ce qui est nul ne peut produire aucun effet, en particulier dans les applications de la loi de priorité. Tous les botanistes sont d'accord, sur les *nomina nuda* ou *semi-nuda*.

(*b*) Le point de départ pour les genres de Linné est certainement son *Genera* de 1737, et non *Le Systema* ed. 1, de 1735. Celui-ci n'avait pour but que d'annoncer les 24 classes de l'auteur. Quelques noms de genres y sont indiqués, mais sans caractères, car au genre n'st pas défini par la seule notion qu'il en de l'Hexandrie ou de la Pentandrie digynie. C'est en 1737 que Linné a énuméré et caractérisé tous les genres qu'il connaissait dans son *Genera*, où il a abandonné des noms du *Systema*, les regardant sans doute comme nuls.

Dans mes *Nouvelles remarques sur la nomenclature*, en 1883, j'ai expliqué pourquoi on doit partir du *Genera* plutôt que du *Systema*, et j'ai vu avec plaisir cette opinion être soutenue récemment par M. Daydon Jackson (*Journ. Bot.* Feb. 1892), *la Botanical Gazette* (Mars, 1892), et M. Schumann (*Naturwiss, Rundschau*, Jahrgang 7, n. 13). Les réflexions de ce dernier savant, favorables à nos lois de la nomenclature de 1867, ont une valeur d'autant plus grande qu'il dit *s'être entendu avant la publication avec les botanistes de Berlin et quelques botanistes étrangers.* Les principes que j'ai soutenus en 1867 et 1883, sont donc appuyés par de bons juges, et j'avoue que c'est une grande satisfaction dans mes vieux jours.

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* En allemand, dans *Botanisches Centralblatt*, 4/5, 1892.

# SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Continued from p. 78.)

Genus XV. GAYA H. B. K. Nov. Gen. et Sp. v. p. 266, t. 475, 476. — Bracteolæ 0. Carpella membranacea apice conniventia 2-valvia. Styli rami apice truncato- vel capitellato-stigmatosi.

Sect. I. Eugaya K. Schum. in Fl. Bras. Fasc. cix. p. 348.— Appendiculæ carpidiorum maturorum semiorbiculares curvatæ.

* Americanes.

† Carpidia circiter 10.

1. G. gracilipes K. Schum. *l. c.* p. 348, t. lxiv. fig. 2.
Hab. Brazil. Lagoa Santa, *Warming* No. 1324.

2. G. Gaudichaudiana St. Hil. Fl. Bras. Merid. i. p. 151; K. Schum. *l. c.* p. 349. *Cristaria corchorifolia* Griseb. Pl. Lorentz. p. 43. *Tetraptera parviflora* Phil. in Anales Univ. Chil. 1870, p. 165. *Sida Gaudichaudiana* Don, Gen. Syst. i. p. 497.
Hab. Brazil! Paraguay. Argentine Republic!

†† Carpidia 12–18.

— Folia concolora.

3. G. subtriloba H. B. K. Nov. Gen. et Sp. v. p. 270, t. 476. *Sida subtriloba* DC. Prod. i. p. 466.
Hab. New Granada!

4. G. calyptrata H. B. K. *l. c.* p. 268. *G. nutans* Turcz. in Bull. Soc. Mosc. 1858, i. p. 201. *Sida calyptrata* Cav.; DC. Prod. i. p. 467. *S. nutans* L'Herit. Stirp. Nov. i. p. 119, t, 57.
Hab. Peru!

5. G. canescens H. B. K. *l. c.* p. 269. *G. disticha* Presl, Reliq. Haenk. ii. p. 113. *Sida disticha* Cav.; DC. Prod. i. p. 467. *S. candicans* DC. Prod. i. p. 466.
Hab. Mexico! Ecuador. New Granada.

6. G. hermannioides H. B. K. *l. c.* p. 268, t. 475. *Sida Gaya* DC. Prod. i. p. 466.
Hab. Mexico! Guatemala!

— — Folia discolora.

7. G. aurea St. Hil. Fl. Bras. Merid. i. p. 152, t. 38; K. Schum. *l. c.* p. 353. *Sida aurea* Don, Gen. Syst. i. p. 497.
Hab. Brazil!

††† Carpidia circiter 20.

8. **G. grandiflora,** n. sp. — Caule erecto piloso, foliis petiolatis cordato-ovatis acuminatis serratis pilosis, floribus axillaribus solitariis pedunculis petiolo longioribus, sepalis ovatis acuminatis, petalis magnis leviter bilobis calyce duplo longioribus, carpellis circiter 20 reniformibus.
Hab. Brazil. Piauhy. "Common in open bushy places," *Gardner* No. 2401!

Stem 3 ft.; leaves, lamina 2–3 in. long, 1½–2 in. broad; petiole 1–1¼ in.; sepals ½ in.; petals 1 in. long.

†† Carpidia 25–30.

9. G. OCCIDENTALIS H. B. K. Nov. Gen. et Sp. v. p. 268. *G. affinis* A. Rich. Fl. Cubens. p. 175. *Sida occidentalis* L. and *S. spicata* Cav.; DC. Prod. i. p. 466. *S. ulmifolia* Spr. Syst. Veg. iii. p. 113, non Cav. *S. cubensis* Dietr. Synop. iv. p. 851.

Hab. Central America! Cuba! Ecuador.

** Nova-Zelandica.

10. G. LYALLII. *Plagianthus Lyallii* Hook. f. Handb. New. Zeal. Fl. p. 30. *Hoheria Lyallii* Hook. f. Fl. N. Z. i. p. 31, t. 11.

Hab. New Zealand. Middle Island!

Sect. II. MICROLOPHIA K. Schum. *l. c.* p. 348. — Appendiculæ carpidiorum maturorum parvæ vix curvatæ semina haud includentes.

† Carpidia 12–14.

11. G. GÜRKEANA K. Schum. *l. c.* p. 354, t. lxiv. fig. iii.

Hab. Brazil.

†† Carpidia ultra 20.

12. G. PILOSA K. Schum. *l. c.* p. 355, t. lxiv. fig. 1.

Hab. Brazil.

Genus XVI. **SIDASTRUM**, nov. gen.—Bracteolæ 6–8 lineares a calyce distantes. Calyx 5-fidus. Columna staminea apice in filamenta ∞ divisa. Ovarii loculi 8–10. Styli inferne connati apice in discum parvum stigmaticum dilatata. Carpella 1-sperma matura ab axi secedentia brevissime bicuspidata dehishiscentia, intus nuda. Semina suspensa radicula supera. Frutex pilis ferrugineis hispidi. Flores sessiles vel subsessiles glomerati rarius subsolitari axillares et in spicam terminalem dispositi.

1. **S. quinquenervium.** *Sida quinquenervia* Duchass. in Tr. et Pl. Prod. Fl. Nov. Gran. p. 176. — Frutescens pilis ferrugineis hispidum, foliis petiolatis oblongis vel lanceolatis acuminatis serratis utrinque ferrugineo-stellato-hispidis basi obtusis vel leviter emarginatis 5-nerviis membranaceis stipulis setaceis, floribus axillaribus et in spicam terminalem dispositis glomeratis rarius subsolitariis sessilibus vel subsessilibus, bracteolis a calyce breviter distantibus linearibus hispidis calyce multo longioribus, sepalis ovatis acutis dense ferrugineo-hispidis, petalis aureis unguiculatis late et oblique cuneatis calyce longioribus, carpellis 8–10 breviter cuspidatis lævibus dorso rotundatis junioribus stellato-pubescentibus.

Hab. Panama, *Duchassaing*! British Guiana, *Schomburgk*, 545 (863 B)! Brazil, nr. S. Joao da Araguay, *Burchell*, No. 9102!

Stem 7–9 ft. high; leaves 4–6 in. long, 2–2½ in. broad; petals nearly ¼ in. long.

In the structure of the carpels this genus closely resembles *Sida*, the seed being pendulous and the radicle superior. It is at once distinguished, however, by the presence of from 6–8 linear

bracts, and thus is intermediate between *Sida* and *Malvastrum;* and I have ventured to propose the name *Sidastrum* for a type of structure worthy, I think, of generic rank.

The specimens from Brazil and British Guiana differ somewhat from those from Panama, and possibly may form a second species.

Triana and Planchon (Prodr. Floræ Novo-Granatensis, p. 176) state that the false involucre is morphologically formed of a leaf reduced to a filament with its two tripartite stipules.

XVII. SIDA Linn. Gen. n. 837. — Bracteolæ 0 rarissime 1–2 setæformes. Styli rami apice truncato- vel capitellato-stigmatosi. Carpella nuda vel conniventi rostrata. Ovula solitaria pendula.

Sect. I. Pseudo-Malvastrum A. Gray, Pl. Fendl. p. 23. — Herbæ vel suffrutices. Bracteolæ 1–3 deciduæ raro desunt. Flores petiolis haud adnati. Carpella aliquando inflata omnino mutica.

* Gerontogeæ.

1. S. Sherardiana Benth. in Journ. Linn. Soc. 1862, p. 101. *Malva Sherardiana* L.; Jacq. Hort. Vindob. t. 142. *M. cymbalariæfolia* Desr. in Lam. Encycl. iii. p. 753. *Malvella Sherardiana* Jaub. et Spach. Pl. Or. t. 444.

Hab. South Europe. Spain! Greece! Turkey! Asia Minor!

** Neogeæ.

2. S. hederacea Torr. in Gray. Pl. Fendl. p. 23. *S. obliqua* Torr. & Gray, Fl. i. p. 233. *S. leprosa* var. *hederacea* K. Sch. in Fl. Bras. Fasc. cix. p. 342. *Malva hederacea* Dougl. in Hook. Fl. i. p. 107. *M. californica* Presl, Rel. Haenk. ii. p. 121. *M. plicata* Nutt. in Torr. & Gray, Fl. i. p. 227. *M. obliqua* Nutt. *l. c.* p. 233.

Hab. South-West United States! Chili!

Var. sulphurea = *S. sulphurea* A. Gray in Pl. Fendl. p. 23. *S. leprosa* K. Schum. *l. c.* p. 341. *Malva leprosa* Ort.; DC. Prod. i. p. 431. *M. sulphurea* Gillies in Hook. Bot. Misc. iii. p. 149. *Malvastrum sulphureum* Gris. Sym. Fl. Arg. p. 43.

Hab. Mexico. Cuba. Argentine Republic! Uruguay! Patagonia!

Var. parvifolia Hemsl. in Biolog. Centr. Amer. i. p. 104.

Hab. New Mexico. Mexico!

3. S. lepidota A. Gray, Pl. Wright, p. 16.

Hab. New Mexico! Arizona!

Var. depauperata A. Gray, *l. c.* p. 18.

Hab. New Mexico! Arizona!

Var. sagittæfolia A. Gray, *l. c.* p. 18.

Hab. New Mexico! Arizona!

4. S. cuneifolia A. Gray, *l. c.* p. 18.

Hab. Texas!

Sect. II. Abutilastrum A. Gray in Proc. Am. Acad. xxii. p. 295. — Arbores vel suffrutices. Bracteolæ 0. Flores petiolis haud adnati. Carpella matura plus minusve inflata membranacea sæpissime mutica.

* Americanæ.

† Folia non lobata.

5. S. DENSIFLORA Hook. & Arn. in Hook. Bot. Misc. iii. p. 155.
Hab. Brazil. Minas Geraes! Paraguay.

6. S. MYRIANTHA Pl. & Lind. in Tr. & Pl. Prod. Fl. Nov. Granat. p. 179.
Hab. New Granada!

7. **S. Eggersii**, n. sp. — Arbor, ramis junioribus teretis minute albo-furfuraceis, foliis cordatis ovatis vel obovatis acutis serratis petiolatis minute pubescentibus, floribus paniculatis paniculis axillaribus, calyce tubo non angulato sepalis ovatis subacuminatis, petalis pallide flavidis calyce longioribus, carpellis 5–6 albo-pubescentibus breviter bicuspidatis seminibus minute pubescentibus.
Hab. West Indies. Tortola, *Eggers*, No. 3183!
Stem 20 ft. high; upper leaves 3 in. long.
This plant may possibly not belong to the Section *Abutilastrum*, the carpels being very little inflated.

†† Folia grosse lobata.

8. S. LINDENIANA Turcz in Bull. Soc. Nat. Mosc. 1858, p. 200; Hemsl. in Biolog. Centr. Amer. i. p. 105, t. 9. *S. Ghiesbreghtiana* Turcz in Bull. Soc. Nat. Mosc. 1858, p. 200. *Abutilon ? ambiguum* Turcz, *l. c.* p. 202.
Hab. South Mexico!

** Australiensis.

9. S. LEPIDA F. Muell. Fragm. vi. p. 168.
Hab. S., W., & N. Australia.

Sect. III. CALYXHYMENIA A. Gray in Proc. Am. Acad. xxii. p. 294. — Suffrutices. Bracteolæ 0. Flores petiolis haud adnati. Calyx post anthesin accrescens membranaceus. Carpella haud inflata.

* Australienses.

10. S. CALYXHYMENIA J. Gay in DC. Prod. i. p. 462; Benth. Fl. Austral. i. p. 194. *Fleischeria pubens* Steud. in Pl. Preiss, i. p. 237.
Hab. S., W., & N. Australia!

11. S. KINGII F. v. Muell. in Vict. Natur. iii. p. 138.
Hab. West Australia, near Lake Austin!

12. S. PHYSOCALYX F. v. Muell. Fragm. iii. p. 3; Benth. *l. c.* p. 195.
Hab. N. & W. Australia.

13. S. PETROPHILA F. v. Muell. in Linnæa, xxv. p. 381; Benth. *l. c.* p. 194.
Hab. S., W., & N.! Australia. N. S. Wales! Queensland.

14. S. INCLUSA Benth. *l. c.* p. 197.
Hab. S. & N.! Australia.

15. S. PLATYCALYX F. v. Muell. in Benth. *l. c.* p. 197.
Hab. S. & N. Australia. N. S. Wales. Queensland.

16. S. CLEISOCALYX F. v. Muell. Fragm. x. p. 73.
Hab. N. Australia.

** Americanes.

17. S. HASTATA St. Hil. Fl. Bras. Mer. i. p. 150, t. 36; K. Schum. *l. c.* p. 288, t. lvi. *S. physocalyx* A. Gray, Pl. Lindh. ii. p. 162.

Hab. Texas! New Mexico! Mexico! Argentine Republic! Uruguay!

18. S. MACRODON DC. Prod. i. 464; K. Schum. *l. c.* p. 289. *S. intermedia* St. Hil. *l. c.* p. 147, t. 36, f. i. *S. physaloides* Presl. Reliq. Haenk. ii. p. 105.

Hab. Brazil! Paraguay. Bolivia! Uruguay. Peru. Argentine Republic.

19. S. PROSTRATA Cav. Diss. i. t. 13, f. 3. *S. urticæfolia* St. Hil. *l. c.* p. 148, t. 37. *S. Hilariana* Walp. Rep. i. p. 317, non Presl.

Hab. Brazil! Paraguay!

Var. FLAVESCENS = *S. flavescens* Cav.; DC. Prod. i. p. 463.

Hab. Paraguay!

Sect. IV. STENINDA Grisebach, Fl. Brit. West Indies, p. 76.—Herbæ vel suffrutices. Bracteolæ 0. Flores petiolis haud adnati. Calyx non angulatus post anthesin non accrescens vel rarissime breviter accrescens. Carpella indehiscentia vel fere indehiscentia nunquam aristata.

* Cosmopolitana.

20. S. LINIFOLIA Cav.; DC. Prod. i. p. 459; K. Schum. *l. c.* p. 292, t. lvii. *S. juncea* Moor, *fide* Afzelius. *S. linearifolia* Schum. et Thon. Pl. Guin. p. 303. *S. angustissima* Miq. Stirp. Surinam. p. 102. *S. viminea* Fisch. in Link Enum. ii. p. 202. *S. campi* Vell. Fl. Flum. vii. t. 19.

Hab. West Indies! Tropical America! West Tropical Africa!

** Australienses.

— Flores solitarii vel subsolitarii.

21. S. CORRUGATA Lindl. in Mitch. Three Exp. ii. p. 13; Benth. Fl. Austral. i. p. 192.

Hab. Australia!

Var. ORBICULARIS Benth. *l. c.* *S. interstans* F. v. Muell. in Linnæa, XXV. p. 383. *S. spodochroma* F. v. Muell. *l. c.*

Hab. Victoria. N. S. Wales.

Var. OVATA Benth. *l. c.* *S. fibulifera* Lindl. in Mitch. Three Exp. ii. p. 45. *S. filiformis* A. Cunn. in Mitch. Trop. Austr. p. 361. *S. nematopoda* F. v. Muell. in Linnæa, XXV. p. 382.

Hab. N. Australia. Queensland. N. S. Wales! Victoria! S. Australia.

Var. ANGUSTIFOLIA Benth. *l. c.* *S. humillima* F. v. Muell. in Trans. Phil. Soc. Vict. i. p. 12.

Hab. W. Australia! Victoria! S. Australia!

Var. TRICHOPODA. *S. trichopoda* F. v. Muell. in Linnæa, XXV. p. 384.

Hab. Australia (except West Australia).

Var. GONIOCARPA F. v. Muell. in Benth. *l. c.*

Hab. N. S. Wales!

22. S. SPENCERIANA F. v. Muell. in Wing's Social Sc. Record, April, 1885.

Hab. N. S. Wales. Queensland.

23. S. INTRICATA F. v. Muell. in Trans. Phil. Soc. Vict. i. p. 19; Benth. *l. c.* p. 193.

Hab. N., S.! & W.! Australia! N. S. Wales! Victoria! Queensland.

24. S. MACROPODA F. Muell. in Benth. *l. c.* p. 193.

Hab. N. Australia!

25. S. CARDIOPHYLLA F. v. Muell. Fragm. viii. p. 242.

Hab. S., W., & N. Australia.

26. S. VIRGATA Hook. in Mitch. Trop. Austr. p. 361; Benth. *l. c.* p. 194.

Hab. S., W., & N. Australia. Queensland. Victoria! N. S. Wales.

Var. PHÆOTRICHA Benth. *l. c.* *S. phæotricha* F. v. Muell. in Linnæa, XXV. p. 382.

Hab. S. Australia.

27. S. ECHINOCARPA F. v. Muell. Fragm. xi. p. 62.

Hab. N. Australia.

28. S. CRYPHIOPETALA F. v. Muell. Frag. iii. p. 4; Benth. *l. c.*

Hab. S., W., & N. Australia. Queensland.

— — Flores aggregati.

29. S. SUBSPICATA F. v. Muell. in Benth. *l. c.* p. 195.

Hab. N. Australia! Queensland! N. S. Wales!

30. S. PLEIANTHA F. v. Muell. in Benth. *l. c.* p. 195.

Hab. Queensland.

*** Neo-Caledonica.

31. S. BILOBA Seem. Fl. Vit. p. 15.

Hab. New Caledonia! Isle of Pines!

Sect. V. PSEUDO-MALACHRA K. Schum. in Fl. Bras. Fasc. cix. p. 280. — Suffrutices vel herbæ. Bracteolæ 0. Flores petiolis bractearum foliacearum adnati sæpissime apice ramulorum sub-umbellato-congesti. Calyx neque angulatus nec accrescens. Carpella non inflata dehiscentia.

— Folia oblonga orbicularia vel obovata.

32. S. CILIARIS L.; Cav.!; DC. Prod. i. p. 461; K. Schum. *l. c.* *S. plumosa* Cav.! Diss. i. t. 12, f. 4. *S. muricata* Cav.!; DC. Prod. i. p. 460. *S. tridentata* Cav.!; DC. Prod. i. p. 461. *S. erosa* Salzm. in Tr. & Pl. Prod. Fl. Nov. Granat. i. p. 176. *Malachra plumosa* Desr. in Lam. Encycl. ii. p. 686. *Malvastrum linearifolium* Buckley in Proc. Am. Acad. 1861, p. 449.

Hab. West Indies! Central America! Guiana! Brazil! New Granada!

Var. TYPICA Schum. *l. c.* p. 284.

Hab. West Indies! New Granada! Central America! Florida!

Var. GUIANENSIS K. Schum. *l. c.* p. 284.

Hab. Guiana! Brazil. New Granada!

Var. FULVA K. Schum. *l. c.* p. 285. *S. fulva* St. Hil. Fl. Bras. Merid. p. 139.

Hab. Brazil!

— — Folia linearia.

33. S. ANOMALA St. Hil. Fl. Bras. Merid. p. 140, t. 33; K. Schum. *l. c.* p. 286, t. lv. *S. fasciculata* Torr. & Gray, Fl. p. 231. *S. involucrata* A. Rich. Fl. Cubens. p. 162. *S. anomala* var. *mexicana* Moric. Pl. N. Am. t. 24.

Hab. Texas! Mexico! Cuba. Brazil. Uruguay. Bolivia. Argentine Republic.

(To be continued.)

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# AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 114.)

16. R. ? MONTANUS Wirtg. *R. Grabowskii* Bab. prius (non Weihe). —*St. arching*, angular or sulcate towards the end, *subglabrous* and coloured like *R. rhamnifolius*. Prickles crowded, declining, deflexed and falcate, much dilated and compressed below, with rather long yellowish points. *L.* 5-nate-pedate or digitate, *broad*. *Lts.* all stalked (bas. briefly) and *unusually broad*, *imbricate*, plicate, opaque and glabrous above, *ashy-felted beneath*, *with slightly irregular crowded acute teeth*, and *many hooked prickles on petiole and midrib; term. broadly subrotund*, *cordate*, *cuspidate*. Panicle narrow, cylindrical above, leafy below, its branches ascending racemose-corymbose, its prickles many, straight, declining and deflexed. *Bracts glandciliate*. Cal. ashy-felted and hairy. "Stam. white, scarcely exceeding the green styles." "Fr. sparingly produced." Apparently allied to *R. Dumnoniensis* and *R. rhamnifolius*, and also (in Mr. Bagnall's opinion) to *R. Colemanni*.

This description, drawn partly from Mr. Bloxam's specimen of the Cadeby (Leic.) plant in Mr. Bagnall's herb. and partly from Prof. Babington's account of "*Grabowskii*," seems to agree remarkably in most of the characters with Dr. Focke's description of *R. montanus* in Syn. R. G. pp. 127, 128; but the Professor's latest published opinion known to me (*Journ. Bot.* 1886, p. 236) is not favourable to the suggestion of their identity.

17. R. CARPINIFOLIUS W. & N. — *St. erect-arcuate*, angular, more or less hairy. *Prickles many*, strong, declining, *yellow*. L. 5-nate, or rarely 7-nate. *Lts. plicate*, *irregularly but usually finely serrate*, *with the teeth remarkably directed forward*, rather hairy above, paler and softly hairy or felted beneath; term. variable, but usually elliptic or broadly ovate, acuminate or acute and cordate. *Pan.* (usually with many falcate yellow prickles) *narrow*, cylindrical or (when luxuriant) pyramidal, *with many short erect-patent branches; often simply racemose above*. *Sep. loosely reflexed in fl.*, *becoming*

*patent after the pet. fall.* Pet. obovate, with long claw, white, or rarely pinkish.

Whole plant remarkably pale in colour; rather like *R. Lindleianus*, but with very different pan. and leaf-serration.

b. *stenophyllus* (P. J. Muell.). — A S.W. Surrey plant which Dr. Focke has thus named has *much narrower lts.* than *carpinifolius*,—narrowly oval or obovate acuminate,—with thick soft felt beneath, and larger and nearly simple serrations; while the narrow racemose *pan.* is only slightly armed *with slender declining or falcate prickles.* Dr. Focke says that *stenophyllus* does not occur in Germany, and that he would combine with it "what the French call *carpinifolius.*" Genevier, however, considered that both *carpinifolius* and *stenophyllus* grew in the Loire basin.

18. R. RHOMBIFOLIUS Weihe. — St. arcuate-prostrate, bluntly angular, with a few scattered short hairs. Prickles declining from a dilated base, usually red. L. 5-nate, conspicuously digitate; *petioles and petiolules strongly armed with falcate and deflexed prickles extending some way up the midribs. Lts.* somewhat doubly serrate-dentate or crenate-dentate, with less wavy edge than in *R. villicaulis* and *R. carpinifolius; all rather narrow and long-stalked, nearly uniform in shape and more nearly so in size than usual;* hairy and shining above, paler green and softly hairy or (sometimes in sunshine) whitish-felted beneath; *term. rhomboid or elliptic, narrowing very gradually into the long acuminate point,* and (in a less degree) towards the entire or rarely subcordate base. *Pan.* long, leafy, *loosely pyramidal, with* rather flexuose rachis and *many strong falcate prickles;* upper branches close, patent, 1-flowered or few-flowered, usually with one or more very narrow simple leaves; the lower distant, long, ascending, cymose, or racemose. *Bracts often gland-ciliate.* Sep. reflexed in fl. and fr. *Pet. narrow, obovate-cuneate, bright pink.* Stam. (pink or white) exceeding *pink styles.* When fresh, looking just intermediate between *R. carpinifolius* and the more glabrous forms of *R. villicaulis.* Commons and heaths.

19. R. VILLICAULIS Koehl. *R. calvatus* Blox.—St. arching, often sulcate, with many or few patent hairs, not unfrequently becoming bald. Prickles nearly straight or declining from much-dilated base. *L. 5-nate-digitate, broad, concave,* rarely 7-nate. *Leaf-toothing compound and very acute, giving a wavy outline to lt.* Lts. wrinkled, shining, hairy above, paler and soft, with many hairs beneath; *term.* broadly ovate-cordate or subrotund *cuspidate-acuminate. Pan. leafy, sometimes up to the rather broad top, long,* occasionally glandular; subcorymbose above; *rachis flexuose, with rather long subequal erect-patent or divaricate cymose branches.* Sep. reflexed in fl. and fr. *Pet. oval, bright pink,* or rarely white. Stam. white, usually far exceeding the *greenish styles,* though in the nearly glabrous form common in S. England falling short of them.

In Scotland the species seems often much hairier. Bloxam gave the name *calvatus* to more than one form of *R. villicaulis,* and not even *chiefly* (it would seem, from the numerous specimens of his naming in my possession) to the very marked plant of Warw., Derb., and Leic. Hedges and heaths.

20. R. GRATUS Focke. — *St.* arcuate-prostrate, angular and *sulcate*, sparingly hairy, and soon becoming bald. Prickles rather short, slightly declining from much-dilated and compressed base. *L. large*, 5-nate-digitate. *Lts. very coarsely and irregularly biserrate*, slightly hairy above, paler and rather thinly but (especially at first) softly hairy beneath; *term.* ovate, elliptic or occasionally subrotund, *acuminate*, subcordate. *Pan. broad, rather short and lax*, with few-flowered patent and patent-erect branches. *Fl. and fr.* (*as well as l.*) *exceptionally large. Sep. ovate-triangular, acuminate, greenish, with narrow white margin*, reflexed in fl., patent after the pet. fall, *loosely embracing fr. Pet. pink. Stam. very long*, all far exceeding styles.

One of the three British Rubi (the others being *rusticanus* and *cæsius*) found by Dr. Focke to have "quite regular pollen grains." In spite of much superficial likeness to glabrous forms of *R. villicaulis*, amply distinct in l., pan., and fl. Heaths and hedges.

21. R. LEUCANDRUS Focke. — *St.* high arching, *obtuse-angled*, usually with a good many hairs at first, but sometimes becoming bald. *Prickles* declining or nearly straight, *with rather long subulate point* from compressed and dilated base. L. 5-nate-digitate and pedate. *Lts. irregularly serrate with large and often compound but very acute teeth*, softly hairy beneath; term. elliptic-acuminate or ovate-acute, round-based or subcordate, rarely cleft to the midrib on one side. *Pan. irregular, lax and unequal-sided; usually elongate and nearly leafless above, with the topmost fl. subsessile*, rather weakly armed; lower branches erect-patent. *Fl. showy. Sep. reflexed in fl. and fr. Pet. large, obovate, pure white.* Stam. white, far exceeding greenish styles.

Quite the typical plant does not seem to have been yet found in Britain. It has a subpyramidal elongate pan., and pale green and very acuminate lts., resembling those of *R. gratus*, though narrower and more acutely toothed. A frequent Herefordshire form growing in marshy thickets comes rather near it. The form referred to by Dr. Focke in *Journ. Bot.* 1890, p. 129, and which is abundant in the sandy districts near Bournemouth (both in Hants and Dors.), has a shorter, broader pan., and lts. of a darker green (pale beneath), rather broadly ovate or even suborbicular, with acute or cuspidate-acuminate point, and closer, finer teeth. This, in colouring, and to some extent in habit, and in the texture and general look of the foliage, approaches *R. affinis*, though quite different in its hairy stem, its much shorter prickles, and its more nearly equal lts.

22. R. ? HIRTIFOLIUS Muell. & Wirtg. — St. arcuate-prostrate, angular, hairy. Prickles rather unequal, of medium size, declining from a dilated compressed base. *L. mostly 5-nate-pedate, exceptionally broad, from the great size of the interm. lts.* Lts. rather irregularly dentate-serrate, hairy on both sides, very soft beneath; term. broadly ovate, obovate or subrotund, cuspidate-acuminate, cordate. *Pan. lax, eglandular, with broad rounded subcorymbose top, and about 2–6 long distant ascending axillary branches, also having their flowers gathered in a rounded subcorymbose or cymose top;* rachis hairy, with scattered unequal declining prickles. Sep. greenish-tomentose,

with paler margins, ovate-acuminate or leaf-pointed. Pet. and long stam. pure white. Woods (Cornw., Dev., and Dors.).

Distinct from *R. pyramidalis* Kalt., as Dr. Focke considered when he saw it growing near Plymouth in 1889. Nearer, I think, to the roundish-leaved form of *R. leucandrus* referred to above as abundant about Bournemouth, though much hairier than that, lower growing, and with a somewhat different panicle.

23. R. Lindleianus Lees. — *St. high-arching, shining "as if varnished,"* slightly hairy, angular. Prickles many, strong, compressed, declining. L. 5-nate. *Lts.* obovate-lanceolate, *often much narrowed below*, irregularly toothed and *wavy at the edge*, pale green, shining and nearly glabrous above, softly hairy and paler beneath; *term.* broadly obovate-acuminate, *rounded or subcuneate below. Pan. densely cylindrical above, truncate at top, with divaricate interlacing cymose branches of nearly equal length, and subsessile term. fl.;* leafy below; *rachis densely clothed with patent hairs, with many slender declining prickles*, and sometimes a very few glands and an occasional acicle. Sep. ovate, acuminate. Pet. oblong, attenuate below, rather large, but not contiguous, white. *Fr. small.*

A very widely distributed, and as a rule easily recognised bramble. Hedges, wood-borders, &c.

(To be continued.)

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# NOTES ON PERTHSHIRE PLANTS.

By Edward F. Linton, M.A., and Wm. R. Linton, M.A.

In the following account of the results of a three weeks' stay in Perthshire last summer, we have mentioned but a small proportion of the rare and interesting plants we met with on excursions made from Killin as our base, because the district has been as well worked as any in Scotland, and we wish to avoid useless repetitions. But the lower part of Glen Lyon, with its adjoining mountains, has fallen under comparative neglect, we believe; and on this ground we have given rather a full report of the plants of any interest that we found in that district. Where Glen Lyon is referred to in this paper, the last few miles above Fortingal is the part of the glen intended, and the distance in miles from Fortingal is usually added in a bracket. Culdamore is the name of a large farm $1\frac{1}{2}$ miles up the glen; and Carn Mairg the highest point of a ridge and group of mountains N. of the R. Lyon, referred to here more than once. We can highly recommend Fortingal to botanists as a convenient stopping-place; there are three or four good expeditions to make; there is a comfortable, well-conducted and inexpensive inn; fine scenery, a Roman camp, and a famous old yew tree in the churchyard, for which a greater antiquity than the Roman camp is claimed (see Syme, E. B. viii. 283).

During a week of our stay at Killin, we had the pleasure and advantage of the company of the Rev. E. S. and Mrs. Marshall;

and at Mr. Marshall's request we have incorporated a few notices in our paper of plants which he was the first to observe; we have, too, in the case of many plants gathered while we were together, the great benefit of his opinion and critical remarks.

We adhere to the asterisk (*) as the symbol of a (real or supposed) new vice-county record. All the plants in this list are from localities in Mid-Perth (88).

*Thalictrum minus* L. An interesting, tall-growing form, among loose rocks by R. Lyon, Culdamore.

*Corydalis claviculata* DC. Fernan. Here and near Killin we found this plant on a rotten thatched roof of a shed.

*Helianthemum Chamæcistus* Mill. N. of R. Lyon, near Fortingal.

*Silene acaulis* L., *Arenaria sedoides* Schultz, a large-flowered mountain form of *Cerastium triviale*, sometimes but erroneously put to var. *alpestre*, and *C. alpinum* L., b. *pubescens*, all on N. slopes of Meall Garbh.

*Hypericum dubium* Leers. Culdamore.

*Trifolium agrarium* L. In a field in Glen Lyon (5 m.), where introduced seed had no doubt at one time been sown.

*Rubus fissus* Lindl. Glen Lochay, near Killin. Linn of Campsie.—**R. Lindebergii* P. J. Muell. Discovered by Rev. E. S. Marshall, near Killin.—*R. Chamæmorus* L. Carn Mairg.

*Potentilla maculata* Pourr. N. slope of Meall Garbh. — *P. Sibbaldi* Hall f. Cairn Mairg.

*Rosa mollis* Sm., var. *cærulea* Woods. Near Killin.—*R. canina* L., var. *arvatica* Baker. Near Killin.—Var. *tomentella* Leman, and var. *pruinosa* Baker. Glen Lyon (about 5 m.).—Var. *verticillacantha* Mérat. Fortingal.

*Saxifraga nivalis* L., and *S. oppositifolia* L. N. of Meall Garbh.

*Ribes rubrum* L., var. *petræum* Sm. (non Wulf.). On ground sometimes flooded by R. Lyon (5 m.).

*Epilobium montanum* × *obscurum*. By R. Tay, just below Perth.

*Circæa alpina* L. Glen Lyon.

*Hieracium holosericeum* Backh. In large quantity and very fine high up in Coire Ardran.—*H. eximium* Backh. var. *tenellum*, and *H. lingulatum* Backh. On rocks N. of the summit between Ben Lawers and Meall Garbh. The former is very rare in the Breadalbane range.—*H. senescens* Backh. Near Cairn Mairg; and N.W. of Meall Garbh.—*H. argenteum*, Fr. Some fine plants in the bed of R. Lyon (6 m.).—**H. buglossoides* Arvet-Touvet. Only a single plant was noticed in Glen Lochay of this well-marked species, about 4 m. above Killin; in Glen Lyon it was more frequent but not plentiful, on rocky slopes near the road (2 to 7 m.).—**H. cæsio-murorum* Lindeb. A fair quantity of this grew near the R. Lochay, one to three miles above Killin. It is identical with our plants gathered near Braemar, which Dr. Lindeberg so named, in 1889, and we now place it on record for Britain for the first time. —**H. Pictorum* Linton. One fine plant in the Lyon valley (5 m.), and several on rocks away to the north of Ben Lawers.—**H. Farrense* F. J. Hanbury. Gathered by Rev. E. S. Marshall in Coire Ardran, and named by Mr. Hanbury for him.—*H. vulgatum*

Fr. Glen Lyon, but not common.—*H. sparsifolium* Lindeb. Glen Lyon (5 m.).—*H. gothicum* Fr. Glen Lyon (5 m.), and near Fortingal. Also near Linn of Campsie, but only three plants seen, —*H. Dewari* Bosw. Glen Lochay, near Killin; Glen Lyon (4 m.). *H. prenanthoides* Vill., *H. crocatum* Fr., and *H. corymbosum* Fr. Glen Lyon (7 m.).—*H. reticulatum* Lindeb. By R. Dochart, and in Glen Lochay, near Killin. Gathered with us by Rev. E. S. Marshall, and so named by him and Mr. Hanbury. Also in Glen Lyon (7 m.), and at Fortingal.—*H. umbellatum* L. In Glen Lyon (4 m.), and at Culdamore. — *H. angustum* Lindeb. (*H. crocatum* Fr., var. *angustatum* Fr.). Two miles up Glen Lochay; Fortingal; Linn of Campsie.

*Vaccinium uliginosum* L. Near Fortingal, N. of R. Lyon.

*Arctostaphylos Uva-ursi* Spreng. Lower N. slopes of Meall Garbh; scarce.

*Loiseleuria procumbens* Desv. E. ridge of Carn Mairg. Not seen elsewhere in the Fortingal district.

*Pyrola minor* L. Rocky burn N. of mountain between Ben Lawers and Meall Garbh.—*P. secunda* L. Near the burn on the way up to Meall Ghaordie; at a rocky break in the Allt Dubh Galair, Meall-na-Saone.

*Veronica serpyllifolia* L., var. *humifusa* Dicks. Near Carn Mairg.

*Melampyrum sylvaticum* L. Between one and two miles up Glen Lochay; very fine.

*Mentha piperita* L. (an escape? on waste ground sometimes flooded, away from houses), *Plantago maritima* L., and *Betula denudata* Hook. Glen Lyon (5 m., 4 m., and 2 m.).

*Salix stipularis* Sm. In leaf only, but no doubt this form of the hybrid (*S. cinerea* × *viminalis*).—*S. cinerea* × *phylicifolia*. Some five or six gatherings from Killin, chiefly near R. Dochart. Also in Glen Lyon (4 m.).—*S. aurita* × *cinerea* (*S. lutescens* Kern.). By R. Dochart and a little way up Glen Lochay, Killin.—**S. aurita* × *Lapponum*. A strong male bush on steep rock high up in Coire Ardran, with leaves just intermediate between *S. aurita* and *S. Lapponum*; a smaller, greener bush was growing close by, which looked as if it was a separate plant, but it may have been connected underground; the situation was one of those which alpine willows love, as if conscious of a secure position from which they can defy attack. This is the first time a living plant of this hybrid has been observed in Britain. About a fortnight later we were fortunate enough to discover a second station for it, this time a female bush in a rather more accessible place, on rocks about two miles N. of Ben Lawers. This corresponds well with Scandinavian specimens of *aurita* and *Lapponum;* the leaves are nearer the latter, but in their twisted tip, slight serration, and stipules present on stronger shoots, show the *aurita* element; the ovaries are long and narrow for *Lapponum*, the style and stigmas rather shortened, and the scales narrow (oblong-lanceolate) but much discoloured. The catkin is curved and has the look of *aurita;* so has the year-old wood, but its bark borrows a darker hue and a tendency to shine from *Lapponum*.—*S. aurita* × *nigricans*. We gathered leaf-

specimens from three different bushes by the R. Lyon, at Fortingal. *S. aurita* × *phylicifolia*. Specimens were taken from three bushes of this hybrid near R. Dorchart, Killin; from a good intermediate example four miles up Glen Lochay; and from a bush with fruit in Glen Lyon (4 m.).—*S. aurita* × *repens* (*S. ambigua* Ehrh.). Near Fortingal; and in Glen Lyon (5 m.), where two forms occurred, one intermediate, the other much nearer *repens*, presumably being *S. ambigua* × *repens*. — *S. nigricans* × *phylicifolia*. High up the Allt tir Artair, not far below Cam Chreag, Killin; also near Linn of Campsie.—*S. Lapponum* L. We saw this (near Fortingal) only in one spot. All the alpine willows fall off greatly in the mountains north of R. Lyon. The northern watershed of Meall Garbh was also poor in willows, owing to absence of cliffs; but this was not the case with the large watershed north of Ben Lawers. Here we found the usual willows of the Breadalbanes, *S. phylicifolia*, *S. nigricans*, *S. Lapponum*, *S. Arbuscula*, and *S. herbacea*; no doubt we should have seen *reticulata* also, if stormy weather had not abbreviated our exploration. — *S. Arbuscula* × *Lapponum* (*S. spuria* Schleicher). Besides gatherings of this hybrid in the Killin district in known stations, to some of which we were introduced by the Rev. E. S. Marshall, we found three bushes of it in the great watershed N. of Ben Lawers above referred to, two of them in fruit; and a fourth which may be this plant, but must await the test of cultivation.—*S. Arbuscula* × *nigricans* (*S. Krœttliana* Brügg). When this hybrid was described by one of us in the *Journ. Bot.* (1891, 214), we were not aware that it had already been named by Brügg; it is given in the Appendix to Nyman's *Conspectus Fl. Eur.* Besides the original station, where one small bush at least still exists, we can now give another, on Ben Lawers, which happily had two or three female catkins in good condition; there is little doubt, too, that a bush on Craig Loaghane (Meall Ghaordie) is this hybrid also, but it grew out of reach and we have only fragmentary leaf-specimens.—*S. Myrsinites* L., occurs very sparsely in the Breadalbanes; besides one or two known stations, we found it, in fruit, in Coire Ardran; on Meall Ghaordie a fine bush of the variety *procumbens* Forbes, grew out from the top of a nasty precipice, and near by a small bush of the type.—*S. Myrsinites* × *nigricans* Wimm. The nomenclature of this hybrid is puzzling. Dr. F. B. White adopts *S. Wahlenbergii* And., after Andersson, who drops *S. Myrsinitoides* Fr. in 1874, in favour of this latest name. *S. punctata* Wahl., is probably the oldest synonym, but Wimmer's way of naming it (which is prior to Andersson's) has the great advantage of stating the origin in the name. This we gathered on the Lochan-na-Lairige rocks, near Killin, and also on Meall Ghaordie, both in fruit.—*S. Myrsinites* × *phylicifolia*. The Rev. E. S. Marshall sent specimens, from a small bush met with by us on Meall Ghaordie when we were together, to Dr. F. B. White, who considered the plant to be this hybrid; and we see no reason to question the naming. *S. herbacea* × *Lapponum* (*S. sobrina* F. B. White). Two fine plants, both in fruit, on a low cliff in the

watershed north of Ben Lawers. We have scarcely any so strong and well-developed in our series of Clova specimens. The young leaves are clothed with the fine silky pubescence of *Lapponum*, but they are quickly glabrescent.—*S. herbacea* × *nigricans* (*S. Moorei* Lond. Cat.)? A very interesting plant was met with by the Rev. E. S. and Mrs. Marshall and ourselves, on Meall-na-Saone, with a creeping habit and strong woody stem; luckily in fruit. Our first idea on gathering it, that it was *S. herbacea* × *nigricans*, is probably right; Dr. F. B. White assented to this as most likely, on specimens sent him by Mr. Marshall; and more deliberate examination confirms this opinion.—**S. herbacea* × *reticulata* (*S. onychiophylla* Ands.). Growing on rocks on Meall-na-Saone, already known as rich in hybrid willows, this creeping plant puzzled us not a little. It had much the habit and appearance of *S. herbacea* × *lanata*, which was growing close by; but as Dr. White pointed out, to whom specimens were sent by the Rev. E. S. Marshall, in whose company we were at the time of gathering it, the capsules are pubescent, and it could not be that hybrid. Dr. White thought it might be *S. Moorei*, on the side of *herbacea*. We have, however, a plant in cultivation, from Clova, which, though it has not fruited yet, we have no doubt is a hybrid between *S. herbacea* and *S. reticulata*; and to this we now put the Meall-na-Saone plant.

*Tofieldia palustris* Huds., *Juncus biglumis* L., and *Luzula spicata* DC., were noted on the N. slopes of Meall Garbh; and the two former, together with *Juncus triglumis* L., *J. castaneus* Sm., and *J. trifidus* L., were seen on mountains near Fortingal, N. of R. Lyon.

*Potamogeton rufescens* Schrad., still abounds in a tarn near the summit of Nan Tarmachan, spreading by stolons and never flowering; altitude about 3000 ft.

*Eriophorum latifolium* Hoppe, together with *Carex limosa* L., at an altitude of about 2250 ft. near Craig Caillich, Killin; and by itself near Fortingal, and Culdamore.

*Carex dioica* L., *C. rigida* Good., *C. aquatilis* (f. *minor*), and *C. ustulata* Wahl., on the mountains near Fortingal, N. of R. Lyon. The latter was in small quantity along one watercourse, more plentiful along another, but not at all easy to see, owing to the fact that the female spikets were concolorous with the partially denuded soil on which it grew. This new station is many miles west of that on Ben Heasgarnich, and at a lower altitude; we had not the means at hand of computing this with accuracy, but have reckoned it at about 1800 ft. This choice little sedge prefers a moderately steep slope over which water gently trickles and oozes, and where other herbage is very thin; the sort of ground in fact that *Juncus biglumis* (which grew with it remarkably fine) loves to occupy. It is not impossible that this may have been Don's original locality; though the probabilities are the other way, as anything N. of the Lyon could hardly be called "Ben Lawers." We spent a good part of two days rambling over the watersheds and corries just north of M. Garbh and Ben Lawers, and were struck with the "grassiness" of the whole mountain side, with comparatively few spots congenial to a sedge that objects to jostle in a crowd.—*C.*

*aquatilis* Wahl., var. *elatior* Bab. Man. ed. 1 (*fide* Mr. Ar. Bennett) = var. *Watsoni* Syme. Glen Lyon (7 m.).—*C. flava* × *fulva* (*C. xanthocarpa* Degl.). By R. Dochart, two miles from Killin; Meall Ghaordie; Glen Lyon (2 m.).—*C. pulla* Good., and *C. rostrata* Stokes, mountain form. Carn Mairg range.

*Agrostis alba* L., var. *maritima* Mey. By R. Dochart, Killin.

*Deschampsia cæspitosa* Beauv., var. *brevifolia* Parn. Near Carn Mairg.—*D. flexuosa* Trin., var. *montana* Huds. Near summit of Carn Mairg.

*Avena strigosa* Schreb. In a field of oats, near the Linn of Campsie.

*Melica nutans* L. Seen in one spot in the watershed N. of Ben Lawers, at a rocky break in a burn.

*Poa alpina* L. Watershed N. of Meall Garbh.

*Festuca rubra* L. Large form in a meadow, Killin.

*Woodsia hyperborea* R. Br. Besides three stations already known, we detected this fern in Coire Ardran, for which we believe it was not known.

*Cystopteris montana* Bernh. In a high corrie, N. of Meall Garbh.

*Polystichum Lonchitis* Roth. Near Carn Mairg.

*Equisetum sylvaticum* L., form *capillare* Hoffm. Near Fortingal.—*E. variegatum* Schleich. A small mountain form of this had been observed by one of us as long ago as 1882, on Craig Caillich; this we found again on another part of the same craig; also in wet springy places below the precipices of Cam Chreag; and again, on a mountain side near Fortingal, N. of the Lyon. Near the last locality was a group of Lycopodia, viz., *L. selago* L., *L. annotinum* L., *L. clavatum* L., and *L. alpinum* L.

On the whole, Carn Mairg and the group of mountains near it just north of Glen Lyon are very barren, and were it not for the discovery of *Carex ustulata* in this district, we should have felt the results to be thoroughly disappointing. The same may be said of the two corries on the northern side of Meall Garbh, which gave but little return for a very long day's tramp. The slopes are too gradual for alpine plants; for, while the pasture appeared magnificent for producing fodder, the gentle fall of the ground afforded little hold for hawkweed, willow or sedge, even along the course of the burns.

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# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 120.)

**Viola palustris** L. Sp. Pl. 934 (1753). **1677.** "Sparingly in the Boggs about Stow-Wood, and on the Banks of Cherwell between Oxford and Water-Eaton; but most plentifully at Chilswell in Berkshire."—Plot, Nat. Hist. Oxon. 144.

**V. odorata** L. Sp. Pl. 934 (1753). **1629.** "Viola purpurea." Johns. Kent, p. 3. "Viola martia alba odoratissima. From Cornwal, Dr. Gunthorp."—Merrett, 125.

**V. hirta** L. Sp. Pl. 934 (1753). **1666.** "Viola fol. Trachelii serotina hirsuta radice lignosa. In Charlton Wood, and in the Lane leading to Sittingbourn, and in the way to Lewsham in a great Gravel pit."—Merr. 125.

**V. Riviniana** Reichenb. Fl. Germ. Excursoria, 705, (1830–32); Fr. in Bot. Notiser, 1841, 81. **1632.** "Viola canina, cærulea inodora, sylvestris serotina, Lob."—Johns. Kent, p. 36. Mr. Britten points out that Johnson (Ger. em. 851) alters Gerard's description (see *V. canina*) into "the wild fielde Violet with *round* leaves," and adds, "this growes commonly in woods and such like places": he also replaces Gerard's figure with one which may be *V. Riviniana*. Gerard may have referred to this when he wrote, "Of [wilde field Violet] I have found another sort growing wild neere unto Blacke heath by Greenewich, at Eltham parke, with flowers of a bright reddish purple colour" (Ger. 701): if so, the plant dates from **1597.** The name *Riviniana* is first taken up for the British plant in Bab. Man. ed. 2, p. 36 (1847) under *V. sylvatica* Fr., which includes this and the next.

**V. Reichenbachiana** Jord. in Boreau, Fl. du Centre, ed. 3, ii. 78 (1857). **1861.** Mr. A. G. More, in Report of Thirsk Nat. Hist. Soc. Bot. Exch. Club, 1861, p. 7.

**V. arenaria** DC. Fl. Fr. iv. 806 (1805). **1863.** Found before 1861 by Messrs. James Backhouse "at the upper end of Teesdale, on the north side of the river."—Babington in Journ. Bot. 1863, 325.

**V. canina** L. Sp. Pl. 935 (1753). **1724.** "Observed by Mr. Du Bois about Mitcham" (Surrey).—Ray, Syn. iii. 364, 5. Mr. Britten suggests that Gerard's "wilde field Violet with long leaves" (Ger. 701) was probably this, though the figure, he says, "seems *V. lactea* or *V. stagnina*."

**V. lactea** Sm. E. B. 445 (1798). **1796.** "Found by Mr. Stackhouse at Pendarvis in Cornwall."—With. Bot. Arr. ed. 3, p. 262. "Near Tunbridge Wells," Kent.—T. F. Forster, E. B. *l. c.*

**V. persicæfolia** Roth. Tent. ii. 271 (1789). *V. stagnina* Kit. (1814). **1839.** Found by Mr. John Nicholson near Lincoln, and described as a state of *V. lactea*.—Ann. N. H. ser. 1, ii. 383.

**V. tricolor** L. Sp. Pl. 935 (1753). **1548.** "Groweth ofte amonge the corne."—Turn. Names, H v.

**V. arvensis** Murr. Prod. 73 (1770). **1597.** "The flowers of this wilde [Pansy] are of a bleake and pale colour, farre inferior in beautie to that of the garden, wherein consisteth the difference."—Ger. 704. E. Forster (E. B. Supp. 2712) identifies this with *V. arvensis*,—a name which he first introduced to our lists,—and cites also Ger. em. 854, fig. 4.

**V. Curtisii** E. Forster in E. B. Supp. 2693 (1831). **1831.** "Found on Braunton-boroughs in Devonshire . . . by the late William Curtis, and introduced into his garden by the name of *Viola littoralis*."—E. Forster, *l. c.* Curtis found it before 1790, in which year it appears, as *V. littoralis*, in the Catalogue of the Brompton Botanic Garden.

**V. lutea** Huds. Fl. Angl. ed. 1, 331 (1762). **1597.** "Master Thomas Hesketh . . . found it growing upon the hils in Lancashire, neere unto a village called Latham."—Ger. 701.

**Polygala vulgaris** L. Sp. Pl. 702 (1753). **1562.** "I have sene thys herbe oft in England."—Turn. ii. 96, back.

**P. oxyptera** Reichb. Iconographia, Cent. i. p. 25 (1823). **1836?** Prof. Babington (E. B. Supp. 2827) thinks this "is probably the plant found by Mr. E. Forbes in the Isle of Man, and described by him in the Trans. [Proc.] Edin. Bot. Soc. pt. 1, p. 35 [42]." **1839.** "Mr. Borrer has gathered [it] on the Newhaven cliffs and elsewhere in Sussex. . . . Gathered by myself at Seacombe, Cheshire, in Sept. 1837."—E. B. Supp. 2827.

**P. serpyllacea** Weihe in Flora, ix. 745 (1826). **1847.** Bleak Down, Isle of Wight, May, 1846. Dr. Bromfield.—Phytol. ii. 966.

**P. calcarea** F. Schultz in Flora, 1837, 752. **1834.** "Found at Cuckstone, Cobham, and other parts of Kent, in the summer of 1831."—D. Don in E. B. Supp. 2764.

**P. amara** L. Syst. ed. 10, 1154 (1759). (1) var. *uliginosa* Fr. **1853.** Found by Messrs. Backhouse on Cronkley Fell, Yorkshire, 24th May, 1852.—Ann. N. H. 2nd S. xi. 272. (2) var. *austriaca* Crantz. **1871.** Discovered June 5th, 1871, on Wye Downs, Kent, by Mr. J. F. Duthie.—Journ. Bot. 1871, p. 212.

**Frankenia lævis** L. Sp. Pl. 331 (1753). **1633.** "I found it flouring the third day of September, 1621, on the ditch bankes at Burseldon ferrey by the sea side in Hampshire. Io. Goodyer."—Ger. em. 567.

**Dianthus Armeria** L. Sp. Pl. 410 (1753). **1634.** "Collibus et nonnullis pascuis."—Johns. Merc. Bot. 21. See Journ. Bot. June, 1892.

**D. deltoides** L. Sp. Pl. 411 (1753). **1597.** "In our pastures neere about London, and other places, but especially in the great field next to Detford, by the path side as you go from Redriffe to Greenewich."—Ger. 476. See Journ. Bot. June, 1892.

**D. cæsius** Smith, E. B. 62 (1794). **1724.** "Found . . . on Chidderroks in Somersetshire by Mr. Brewer."—Ray, Syn. iii. 336, 2.

**D. prolifer** L. Sp. Pl. 410 (1753). **1650.** "In the grounds 'twixt Hampton Court and Tuddington" (Middx.).—How, Phyt. 10, 12.

**Saponaria officinalis** L. Sp. Pl. 408 (1753). **1597.** "It groweth wilde of itselfe neere to rivers and running brooks in sunnie places."—Ger. 360.

(To be continued.)

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## *SHORT NOTES.*

Rubus ammobius Focke (p. 110). — The Rev. W. Moyle Rogers says of this species, "Believed to occur in Scotland." Probably he has in view a plant found by me near Perth seven or eight years

ago, and submitted to Prof. Babington, who wrote of it, "It is probably the *ammobius* of Focke."—F. Buchanan White.

Gentiana Amarella L. var. præcox "Raf." (p. 120). — My experience is the reverse of that given by the Rev. E. S. Marshall. In the neighbourhood of Croydon the seeds germinate in the autumn, and I have watched it through the winter up to the flowering stage in May and June. I have never seen the normal form growing with this, though it occurred some yards away.—Arthur Bennett.

Sonchus palustris L. (p. 121).—Below where Mr. Wolley Dod locates the plant there is no difficulty in getting to it, except that it is as well not to attempt it if firing is going on at the "butts," as it is unpleasantly near to them. I have seen between two and three hundred plants of the heights he gives in this station. I fear the species is not so frequent in Norfolk as one might be led to suppose from the Rev. Kirby Trimmer's *Flora* and Supplement, as specimens I have seen from two of the stations given are the marsh form of *S. arvensis* L., in both cases gathered by Mr. Trimmer himself.—Arthur Bennett.

Polygonum dumetorum in Wilts (p. 69). — Mr. Preston's list reminds me that I have not yet recorded *Polygonum dumetorum* L., which I found in considerable quantity in a copse on a narrow wooded ridge, known as Whitsbury Wood, at the end of last August. This wood is mostly in Wilts, with a southward extension into Hants; it was in Wilts that the *Polygonum* grew, though I saw it again next day on driving to Fordingbridge, in S. Hants. It is known for the latter county, but new to Wilts.—Edward F. Linton.

Carex aquatilis in Ireland.—While botanising along the banks of the River Main, in Shane's Castle Park, Co. Antrim, in June last, I came across a luxuriant growth of the plant in a ditch of standing water communicating with the river about a mile and a half above where it flows into Lough Neagh. This sedge, which was formerly accounted of such extreme rarity in Britain, and which was first obtained in Ireland by Mr. S. A. Stewart, in Co. Roscommon, in 1883 (*Journ. Bot.* 1885, 49), is now added to the flora of Dist. 12 of *Cybele Hibernica*. The plant grows very luxuriantly in the present station, the stems being 3–4 ft. long, and the bracts 1½–2 ft. in length. At the mouth of the stream, a mile and a half further down, I observed from the eastern shore an extensive growth of a large *Carex* on the opposite shore, which is very possibly the same plant, but had no opportunity of obtaining specimens of it. The station above mentioned is, so far as I am aware, the lowest yet observed for *C. aquatilis* in Ireland, being only about forty-five feet above high-tide level. The specimens were kindly determined for me by Mr. Arthur Bennett, who refers them to var. *elatior* Bab.—R. Lloyd Praeger.

## *NOTICES OF BOOKS, &c.*

### Sets of British Plants.

*Set of British Rubi.* 1892–1895. Issued by the Revs. E. F. Linton, W. R. Linton, R. P. Murray, and W. Moyle Rogers. Fascicle I.

Our four clerical *Rubus*-students are to be congratulated on the satisfactory character of their first fasciculus. If this work is carried out as it has been begun, it will mark a new era in our knowledge of British Rubi, in which our indigenous plants are carefully compared and identified with those of Continental Europe. The present fascicle of twenty-five numbers is entirely made up of rare critical forms, nearly all of them from the South of England. First comes *Rubus Leesii*, gathered in Derbyshire. The *Suberectus* group is represented by *sulcatus*, *nitidus*, *integribasis*, and *affinis*; the group with equal prickles by *erythrinus*, *incurvatus*, *imbricatus*, *rhomboideus*, *gratus*, and *leucandrus*; the *Raduli* by *Colemanni*, *adscitus*, *gymnostachys*, *præruptorum*, *rudis*, *melanodermis*, *fuscus*, *anglosaxonicus*, and *Bloxamii*; and the *Glandulosi* by *rosaceus*, *obscurus*, *viridis*, *Durotrigum*, and *longithyrsiger*. Six of these, *Leesii* and *incurvatus* of Babington, *longithyrsiger* and *Bloxamii* of Lees, *imbricatus* of Hort, and *Durotrigum* of R. P. Murray, are types originally described by British authors; and four of them, *nitidus*, *affinis*, *fuscus*, and *rudis*, are forms figured and described by Weihe and Nees, the names of which, until very recently, have been wrongly applied in this country. The specimens, without exception, show clearly the differential characters by which the form is marked, and the undertaking will be a great help to botanists who want to understand this intricate genus. The synopsis which is promised with the second fasciculus is that now publishing in these pages by the Rev. W. Moyle Rogers.

J. G. B.

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The first Fasciculus of the *Characeæ Britannicæ Exsiccatæ*, by Messrs. H. & J. Groves, is now ready for issue. It consists of thirty numbers, and illustrates species of *Chara*, *Lychnothamnus*, *Lamprothamnus*, *Tolypella*, and *Nitella*. Messrs. Groves hope to illustrate, in this most effective manner, all the British species in about three Fasciculi. It is not easy to give an idea of the difficulties overcome by Messrs. Groves in the preparation of these specimens. There were not only their acquisition and determination, but the mechanical difficulties of mounting are in no group of plants so formidable as in the *Characeæ*. The specimens are so well selected and mounted that it may be doubted if even *Characeæ* have ever received such attentions before. There are so many bogus published sets of Cryptogams (especially Algæ and Fungi) now being issued on the Continent (*e. g.*, a well-known set of Algæ contained in its last fascicle a quantity of crustaceous eggs named *Valonia!*) that this issue deserves a special welcome. Copies of the fascicle are to be obtained from the Messrs. Groves, 58, Jeffreys Road, Clapham, S.W., price one guinea, carriage free.

G. M.

*Annals of the Royal Botanic Garden, Calcutta.* Vol. iii. 4to. Bengal Secretariat Press, 1891: containing (1) *The Species of Pedicularis of the Indian Empire and its Frontiers.* By D. Prain, M.B., F.R.S.E., Curator of the Herbarium: pp. i.–iv. 1–196, tt. 1–37. (2) *The Magnoliaceæ of British India.* By G. King, M.B., LL.D., F.R.S., C.I.E., Superintendent of the Garden: pp. 197–225, tt. 38–74. (3) *An Account of the Genus Gomphostemma.* By D. Prain: pp. i., ii., 227–271, tt. 75–105. (4) *The Species of Myristica of British India.* By G. King: pp. 275–331, i.–vi. tt. 106–174.

It weighs 11 lb. 10 oz., without any binding, and perfectly dry —to imitate one of Macaulay's methods of commencing a review. This is an admirable and astounding work. The quality and elaboration of the botany, the 174 quarto plates, the type and correctness of printing, can be seen in few systematic botanic works published of late years in England. To those who know by experience the difficulties in getting any "finished" work done at Calcutta, and the hindrance to scientific work from the heavy official duties, the present volume can be described by no word but astounding. Dr. King and Dr. Prain have overcome obstacles as none of their distinguished predecessors in the Calcutta Botanic Garden have been able to do. It can only be attempted here to give a general idea of the four treatises comprised in the volume.

The genus *Pedicularis* now contains 261 species, of which 69 are Indian; a historic and morphologic account is given. Then follows an essay on its geographic distribution and evolution. The present distribution is entirely in the Northern Hemisphere, and Dr. Prain considers it probable that, from an arctic origin, streams of species have flowed over Europe, Asia to Ceylon, Japan and North America. Next follows the division of the genus into 3 divisions, 5 subdivisions, 78 sections, with diagnoses thereof, and the allocation of the whole 261 species into the 78 sections. Lastly comes the full description of the 69 Indian species, with plates of every species and the more striking varieties. The Latin diagnosis of each species runs generally to 120–180 words, without any punctuation; the synonymy, citation of subsequent authors, enumeration of localities, description with measurements, and discussion in English, are all on the same grand scale. The plates, besides giving a general life-size picture of the species, give copious dissections and magnifications of the corolla, stamens, seeds—in short, of all the characters treated of in the text. There are, moreover, numerous tables showing the average comparative lengths of calyx, corolla-tube, &c., with carefully added notes of the number of flowers in each case dissected and measured.

It is really delightful to get a piece of thorough work; to see how all the questions of classification, geographic distribution, evolution in time, become doubly interesting when worked out upon a single genus, of which the author has a firm grasp, knows nearly every species, and is able to reject all the false identifications and wrong localities which so often obscure the results when some ambitious man attempts to deal with the divisions, affinities, geography and

evolution of an order or large group of which he does not know one-quarter of the species, while of the quarter he has got before him 20 per cent. have got wrong names.

*But*—there is another side—one almost regrets the valuable labour expended in the mere literary finish and press-work of a treatise on 69 species of Indian *Pedicularis*. Too much pains cannot be bestowed on such work; it is not necessary always to publish all the details of good work, or to publish them in so heavy and expensive a form. Moreover, though full publication in a large treatise is very convenient to the next monographer who can spend time in mastering all the views and verbiage of his predecessor, a more concise form, with summary of results, is the more convenient for the much larger band of workers who wish to make use of the monographer's results without wading through all his processes. The geography in Dr. Prain's memoir is fully and carefully done; but it would take much time to convert the information, for instance, so that the distribution of *Pedicularis* might be compared with that of some other genus of plants or insects.

The plan of writing diagnoses of 150 words without any stops is open to comment. The only reason for not using stops is a supposed scientific propriety or tradition, *viz.*, that stops may be used in a description in the nominative case, not in diagnoses in the ablative case. But this is not so; Linnæus, in the very short diagnoses in the second edition of *Species Plantarum*, uses a stop (comma) before each substantive; so did R. Brown, the DeCandolles, Bentham, and Hooker; Linnæus and most writers use a heavier punctuation in the descriptions. Stops undoubtedly save time, even in short diagnoses; but, when Dr. Prain employs diagnoses of 120–180 words, he should surely give every assistance to those who have to work with them.

Dr. King's *Magnoliaceæ* is a much shorter and simpler paper, but of much practical importance, as several species of Magnolias afford very fine timber; especially the beautiful *M. Campbellii* Hook. f. et T. Thoms., formerly abundant round Darjeeling. Dr. King describes 46 species of *Magnoliaceæ* as against 27 recorded in Hooker's *Flora of British India:* six of the species are here described for the first time, and several other species are Dr. King's own, having been first published by him in the *Journ. As. Soc. Bengal*, v. 58, pars 2. Every Indian species is figured in the paper under review, which will make it very valuable to forest officers. Dr. King has abstained from all speculations concerning evolution in time, &c., and has presented his information (much of which is new regarding even the old species) in the simplest form. His diagnosis (and description combined) of each species is in English, fully punctuated. The paper is much easier to get at than Dr. Prain's, but it may be doubted whether it was easier to write. The material for large trees in India is often imperfect; the matching of fruiting and flowering specimens often difficult, sometimes uncertain; the flowers of a large Magnolia tree in full blossom are prominent two miles off across a ravine 3000 ft. deep; when you stand under the tree you can see none of those on the tree; grave mistakes have originated by picking up flowers under the tree.

Dr. King has overlooked one species, viz., *Kadsura Wattii* C. B. Clarke in *Journ. Linn. Soc.* v. 25 [Feb. 1889], p. 4, tab. 1. This plant is of no economic importance; but, whether a good species or not, has some interest as marking the incursion of the Chinese Flora into Eastern Assam.

The genus *Gomphostemma*, according to Dr. Prain, contains 25 species, whereof 19 extend from Nepal to Singapore, 2 are endemic in South Madras, 2 in Java, 1 in China, 1 in the Philippines. The memoir follows nearly the form adapted for *Pedicularis*, but is less heavy. The diagnoses are shorter, and punctuated. The descriptions are, as in the *Pedicularis* paper, put in the ablative, and stopped only with commas. There is a map appended, which shows at a glance the distribution of the species. The genus comprises only undershrubs and herbs of no economic use, so far as known at present. There is a misprint (p. 271) of Jheria, for which Theria should be read. This is the Terrya of Hooker's *Himalayan Journals*, v. 2, p. 266, well known as the gate to the Khasi Hills.

Dr. King describes and figures 67 Indian species of *Myristica*; the Nutmeg of the Spice Islands (*Myristica fragrans* Houtt.) is added as cultivated. The great mass of these species are in and about the Malay Peninsula; two species extend northwards to Assam, and a few are found in Ceylon and South India. Of the 67 species, arranged in 5 sections, 25 are here described for the first time—a very large number, considering that Sir Joseph Hooker's account of the Indian *Myristica* in *Flora of British India* was published so late as 1886, and admitted only 30 Indian species. The great additions to our knowledge made by King are founded on the very fine and extensive collections he has got in of late years from the Malay Peninsula—especially from Penang, Perak, Malacca, &c.

In this memoir Dr. King follows closely the form he had adopted for the Magnolias. Here also he has a splendid order of economic value to deal with; the species are trees, most of them large trees 50–100 ft. high. They are still more difficult to deal with than the Magnolias, inasmuch as that they are dicœcious, and female flowers very rare; while in many cases there is so great a similarity in habit and leaf between the different species that it is exceedingly difficult, when a female specimen has been secured, to be at all sure to what male it belongs. Dr. King speaks with great modesty concerning his own attempts to grapple with these difficulties. His work will be the guide of the Forest Department, and the starting-point for all future investigation of the order. The specific name, "*sucosa*" (p. 301) may be carped at. It is true that *sucosa* is the preferable classical form, and one letter less; but "*succosa*" is not wrong, and is the established familiar form to botanists. It is hardly worth while disturbing them from botanic reflections for a moment by reminding them of the superior purity of *sucosa;* especially while botanic literature teems with absolute blunders, such as lævis for smooth, ochreæ, &c.

The present notice is an attempt to give those who have not seen this book some notion of its size, importance, and contents. A few remarks have been ventured on matters of form at once catching

the eye of any botanic writer. To criticise the botanic merits would require to work through with it, in some large herbarium, all the Indian species of *Pedicularis*, *Magnoliaceæ*, *Gomphostemma*, and *Myristica*. Without doing this, it may be safely described as a grand work, not less remarkable for its purely scientific value than for its practical utility. The Government at Calcutta may be congratulated on possessing officers having both the knowledge and the industry to prepare such a work, and also on their wise liberality in publishing it.

C. B. Clarke.

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*Les Champignons.* Par A. Acloque. Bibliothèque Scientifique Contemporaire. Paris: Baillière et Fils. 1892. Pp. viii. 328, 60 figs. Price 3 fr. 50 c.

This volume, of a series that has been several times noticed in this Journal, deals with Fungi from the point of view of their biology, economics, and general taxonomy. One cannot help admiring the apparent facility with which French writers of popular scientific books contrive to evade repellent scientific terms, and to make their writings in this respect more attractive. This book is a good example of such successful treatment. It is to be wished, therefore, that the same might be said of its botanical quality. It is not "up to date;" there are minor errors here and there, such as calling *Cystopus candidus* (White Rust) "intéressante urédinée," though the author elsewhere knows better; and he is obstinately conservative on some points, such as the lichen-gonidia question. It may be malicious, but one is rather pleased to see that one's own country is not alone in literature of this kind—though we can beat this any day in the production of sad examples. Taking it as a whole, M. Acloque's book is as good as any popular book we have on the nature of Fungi—especially in respect of its clearness of exposition. Though the author has justly the greatest respect for Dr. Cooke, he feels bound to call him to account about some casual remark as to the vegetable nature of Algæ never having been contested. "Ici, M. Cooke se trompe"; and in two pages this author shows it, though Dr. Cooke probably never meant more than that modern writers do not contest the matter—at least they had not then begun to quarrel afresh about *Volvox* and *Protococcus*, &c. It is a pity that the figures are not more satisfactory.

G. M.

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## *ARTICLES IN JOURNALS.*

*Annals of Scottish Nat. History* (April).—A. Fryer, '*Potamogeton undulatus* in Stirlingshire.'—Arthur Bennett, 'Records of Scottish Plants for 1891.'—G. C. Drece, 'Plants of Glen Spean, Westerness.'

*Bot. Centralblatt* (Nos. 14, 15).—G. van Schlepegrell, 'Beiträge zur vergleichenden Anatomie der Tubifloren.'

*Botanical Magazine* (April).—*Lilium primulinum*, Baker, sp. n.

*Bot. Notiser* (häft. 2).—P. G. E. Theorin, 'Några lafväxtställen.'—O. Borge, 'Subfossila sötvattensalger från Gotland.'—Id., 'Algolo-

giska Notiser' (1 plate). — C. Kaurin, *Bryhina scabrida* (*Hypnum scabridum* Lindb.).—H. Dahlstedt, 'Hieraciernas innovationssätt och morfologiska typer inom Gruppen Archieracia.' — V. F. Hohn, 'Beskrifning af några Salix-former från Angermanland' (*S. cineroides*, *S. hirticeps*, *S. parvifolia*, *S. tricolor*, spp. nn.).

*Bot. Zeitung* (Mar. 18, 25). — R. Coesfeld, 'Zur Anatomie und Physiologie der Laubmoose.'—R. Hartig, 'Ueber Dickenwachsthum und Jahringbildung.'—(Ap. 1–8).—G. Karsten, 'Zur Entwickelungsgeschichte einiger *Gnetum*-Arten' (2 plates).

*Bull. Soc. Bot. France* (xxxviii.: Sess. extraordinaire à Collioure: April 1).—O. Debeau, *Taraxacum Neyranti*, *Stachys albereana*, *S. brachyclada*.—G. Gautier, 'Plantes rares ou nouvelles des Pyrenées-Orientales' (*Onopordon Gautieri* Rouy, n. sp. — C. Flahault, Paul Oliver (Feb. 16, 1842–Jan. 22, 1890). — P. Oliver, Barthélémy Xatart (Mar. 1, 1774–Nov. 24, 1846).—F. Gay, 'Algues de Bagnères-de-Bigorre.' — —. Miégeville, 'Quelques plantes des Pyrenées-Centrales.' — C. Flahault, 'La Question Forestière.' — H. Coste, '150 Plantes nouvelles pour Aveyron.'

*Gardeners' Chronicle* (Ap. 2). — *Pelexia Wendlandiana* Kränzlin, *Aglaonema costatum* N. E. Br., spp. nn.

*Irish Naturalist* (April).—T. Johnson, 'Seaweeds from the West Coast of Ireland.'

*Journal de Botanique* (Ap. 1). — M. Micheli, 'Légumineuses de l'Ecuador et de la Nouvelle-Grenade.'—C. Sauvageau, 'Sur quelques Algues phéosporées parasites' (2 plates). — E. G. Camus, 'Monographie des Orchidées de France.'

*Journ. Linn. Soc.* (Bot. xxix. 198: Mar. 30). — R. J. Harvey Gibson, 'Structure and Development of the Cystocarps of *Catenella Opuntia*' (2 plates).—J. B. Carruthers, 'Cystocarps of some species of *Callophyllis* and *Rhodymenia*' (1 plate). — T. Hick, 'A new fossil plant from the Lower Coal-Measures' (*Tylophora radiculosa*: 2 plates).

*La Notarisia* (Feb. 29). — F. Castracane, 'Sur una raccolta di *Amphipleura pellucida*.'—G. de Lagerheim, 'La "Yuyucha."'

*Midland Naturalist* (April). — W. B. Grove, 'Fighting the Dry-rot.'—W. Mathews, 'County Botany of Worcester' (contd.).

*Naturalist* (April).—M. B. Slater, 'Report on Yorkshire Cryptogamia, 1890–1.'

*Nuovo Giorn. Bot. Ital.* (April 4).—G. Paoletti, 'Sui movimenti delle foglie nella *Porlieria hygrometrica*' (5plates). — T. Caruel, 'L'Orto e il Museo botanico di Firenze nell' anno 1890–91.'

*Oesterr. Bot. Zeitschrift* (April). — J. Bornmüller, '*Phlomis Russelliana* und *P. Samia*.' — F. Arnold, 'Lichenologische Fragmente.'— J. Freyn, *Chærophyllum gracile*, *Echinophora chrysantha*, *Ferula parva*, *Ferulago asperula*, *Peucedanum xantholeucum*, *Trigonosciadium intermedium*, spp. nn. — R. v. Wettstein, 'Die Arten der Gattung *Gentiana* aus der Sect. *Endotricha*.' — H. Braun, '*Galium Mollugo*.'

## *BOOK-NOTES, NEWS, &c.*

The third part of *Plantæ Postianæ* (Lausanne, Bridel, Feb. 1892) contains several new species of flowering plants, as well as a new genus of Cynaroideæ, named *Autrania* C. Winkler & Barbey,—in honour of M. Eugène Autran, Keeper of the Boissier Herbarium,—of which an excellent plate is given.

We have received No. 9 of the Contributions from the Shaw School of Botany—an *Appendix to the Catalogue of the Flora of Nebraska*, by Mr. H. J. Webber.

Mr. Edward Whymper's new book, *Travels among the Great Andes*, contains lists of the plants collected by him in various localities, as determined by the staff of the Botanical Department, British Museum, in the Herbarium of which the specimens have been deposited. The species met with by Mr. Whymper are for the most part identical with those collected by Spruce, Jameson, and others: the more interesting novelties were figured and described in this Journal for 1890, t. 297, p. 161.

M. C. Sauvageau describes a new British *Ectocarpus—E. minimus* Näg. in herb.—in his paper, "Sur quelques Algues phéosporées parasites" in the *Journal de Botanique* for April 1st. The habitat is given as "in *Himanthalia lorea* ad littora Angliæ (Dover, Nägeli! Berwick, Batters!)."

Messrs. Britten and Holland are preparing a Supplement to their *Dictionary of English Plant-names*, and will be glad to receive any additions or corrections for inclusion therein. They may be sent to Mr. Britten at 18, West Square, London, S.E.

We are glad to receive the first number of *The Irish Naturalist* (Dublin, Eason), a new sixpenny monthly journal to be devoted to "general Irish Natural History," which has been adopted as the official organ of the principal Irish Natural History Societies. The Editors (Messrs. G. H. Carpenter and R. Ll. Praeger) invite contributions on all matters connected with natural science in Ireland, and the present number gives promise of a useful addition to the scientific literature of these islands. The only botanical paper in the number is one by Prof. Johnson, on "Seaweeds from the West Coast of Ireland," in which a new species, *Pogotrichum hibernicum*, is named, but not described.

The Italian Botanical Society invites botanists of every nationality to a general assembly in Genoa, in connection with the celebration of the fourth century of the discovery of America by Columbus. This Botanical International Congress will be held in Genoa from the 4th to the 11th of September. At the time of the Congress will also take place the inauguration of the new Botanical Institute, built and presented to the University of Genoa by the munificence of Mr. Thomas Hanbury, as well as a horticultural exhibition.

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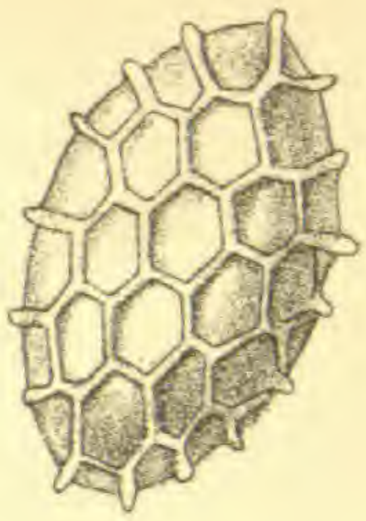

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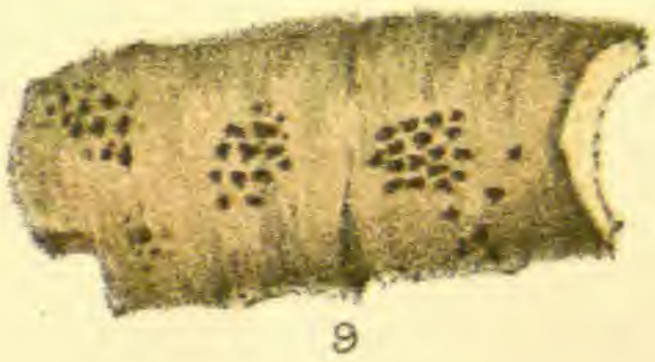

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St. Vincent Fungi.

West,Newman imp.

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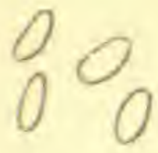

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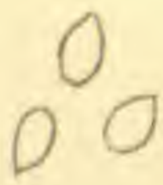

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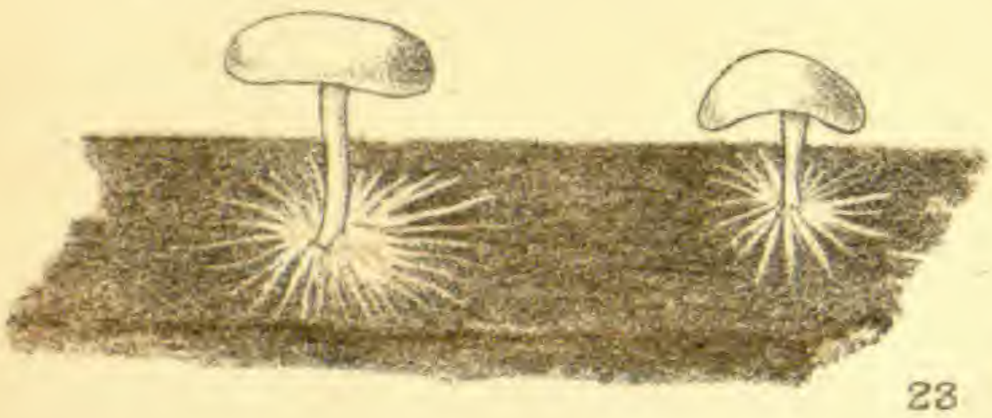
G.Massee del.
R.Morgan chromo.

St. Vincent Fungi.

West, Newman imp.



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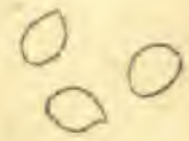

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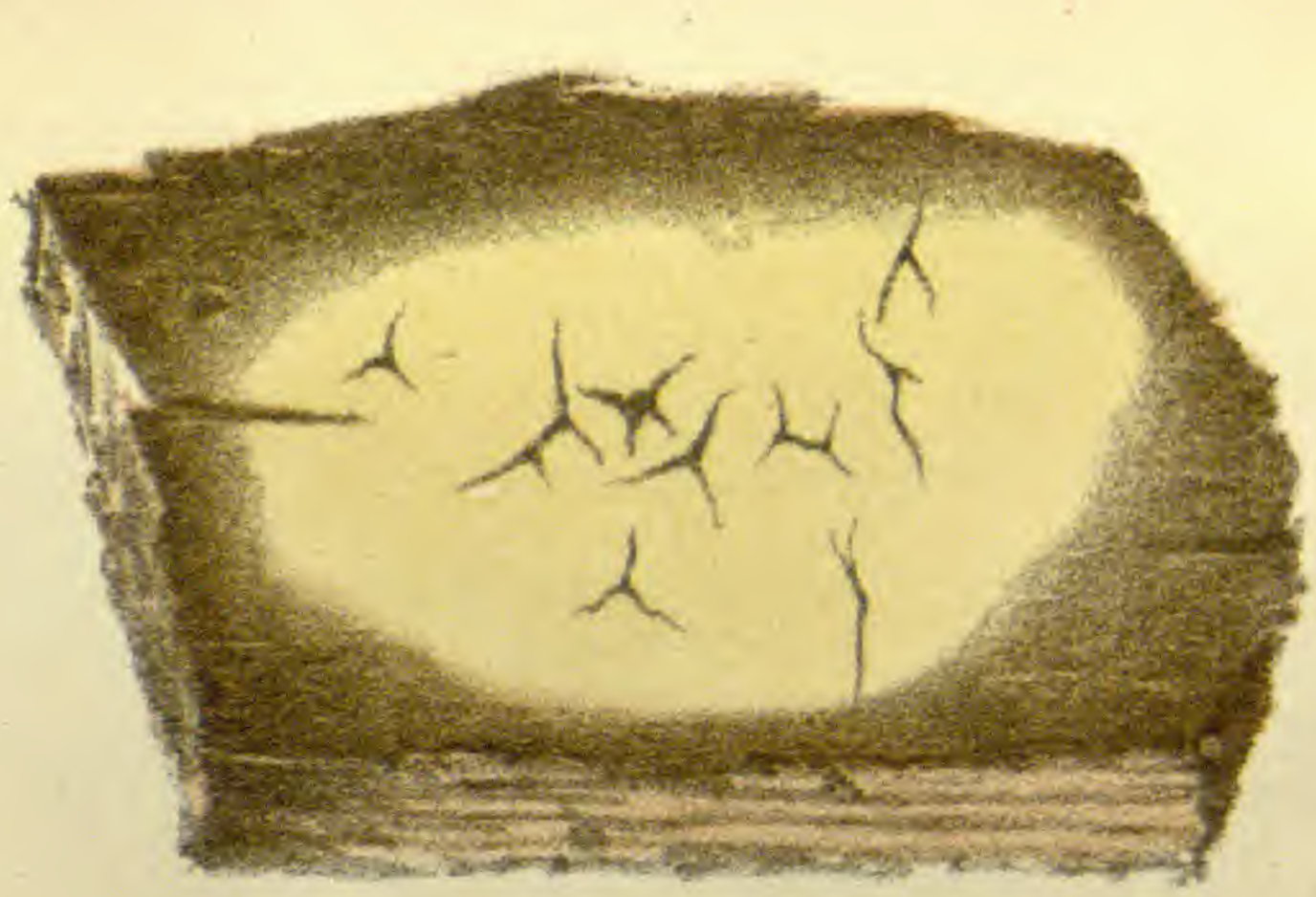

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G Massee del.
F.Morgan chromo.

West, Newman imp.

St Vincent Fungi.

# SOME WEST INDIAN FUNGI.

By George Massee.

(Plates 321, 322, 323.)

The collection of Fungi here enumerated was made in St. Vincent by Mr. W. R. Elliott, the cryptogamic collector of the West India Natural History Exploration Committee. The high percentage of novelties is to be attributed to the careful mode of preservation of the specimens, accompanied by notes and sketches. The types described are in the British Museum Herbarium.

**Marasmius nanus**, sp. n. (Plate 323, figs. 23–25, 28). Pileo convexo- plano, obtuso, sicco, levi, glabro, fusco-cinnamomeo; stipite gracili pallidiore, e mycelio albo contexto oriundo; lamellis adnatis, distantibus, pallidis; sporis subglobosis, circa 4 $\mu$ diam.

Hab. Ad truncos putridos. Morne Cochon.

Gregarious, brownish cinnamon; pileus about 1 line across; stem 1 line long. The white, strigose, radiating mycelium appears as a white tuft before the pileus developes, and at this stage looks like some mould. Dry, tough, persistent.

**M. catervatus**, sp. n. (Plate 322, figs. 16-18). Gregarius; pileo e convexo vel campanulato expanso, membranaceo, e levi striato, albido; stipite fistuloso, erecto, albo, levi, glabro, basi mycelio incrassato; lamellis denticulo decurrente adnatis, distantibus, albis dein pallidis; sporæ ellipsoideæ, 6 × 4 $\mu$.

Hab. In ligno emortuo, Richmond Valley.

Pileus about $\frac{1}{3}$ in. across; stem $\frac{1}{2}$–$\frac{2}{3}$ in. long, $\frac{1}{2}$ line thick, equal. The only known entirely white species with the margin of the pileus striate.

*Pleurotus flabellatus* B. & Br. Petit Bordel.
*Lentinus cubensis* B. & C. Bucament Valley.
*L. siparius* B. & C. Richmond Valley.
*L. calvescens* Berk. Mount St. Andrew's.
*L. exilis* Kl. Sandy Bay.
*Schizophyllum commune* Fr. Bonhomme Valley; Government House.

**Hygrophorus bellus**, sp. n. (Plate 321, figs. 1–4, 8). Pileo carnoso, convexo-plano, centro depressiusculo, glabro, læviusculo, e coccineo expallente; stipite cavo, glabro, æquali vel sursum incrassato, lutescente, coccineo-striato; lamellis decurrentibus, distantibus, crassis, flavis, aurantio-tinctis, interstitiis venosis; sporis ellipsoideis, hyalinis, 18 × 10 $\mu$.

Hab. Ad terram in silvis umbrosis, Nariaqua Valley (2300 ft.).

Pileus 1$\frac{1}{2}$–2 in. across; stem about 2 in. long, 4 lines thick above. Allied to *H. hæmatocephalus* B. & C., but differs in the pileus not being umbilicate, in having the interstices as well as the sides of the gills veined, and more especially in the very large spores.

*Lenzites applanatus* Fr. Richmond Valley.

**Flammula hispida**, sp. n. (Plate 323, figs. 31–33). Pileo carnoso, umbilicato quandoque infundibuliformi, demum explanato,

sicco, levi, ochraceo-fulvo, squamulis erectis, acutis, hispido; stipite cavo, sursum attenuato, fibrilloso, pallido; lamellis adnatis, subdecurrentibus, confertis, latis, ex aureo fulvo-ferrugineis, acie pallidiore crenulata; sporis ellipsoideis, basi apiculatis, ferrugineis, $7 \times 5\ \mu$.

Hab. Ad truncos putridos, Chateau Belair.

Allied to *F. sapinea* Fr., but distinguished by the decurrent gills, hispid pileus, and even stem. Pileus about 1 in. across; stem $\frac{2}{3}$–1 in. high.

*Panæolus papilionaceus* Fr. Chateau Belair.
*Polyporus tricholoma* Mont. Petit Walliboo; Morne Cochon.
*P. nivosus* Berk. Morne Garu Mts.
*P. salignus* Fr. Morne Garu Mts.
*Fomes lucidus* Fr. Morne Garu Mts.
*F. microporus* Fr. Morne Garu Mts.
*F. australis* Fr. Mount St. Andrew's (1000 ft.).
*F. radiatus* Fr. Petit Bordel; Richmond Valley.
*Polystictus lentus* Berk. Morne Cochon (1200 ft.).
*P. tabacinus* Mont. Sharp's Valley.
*P. pinsitus* Berk. Lomard Bay.
*P. occidentalis* Klotzsch. Sharp's Valley.
*P. lilacino-gilvus* Berk. Chateau Belair.
*P. trichomallus* Berk. & Mont. Chateau Belair.
*P. cyclodes* Fr. Mount St. Andrew's.

**P. albidus,** sp. n. Pileo coriaceo, subtenui, applanato, semiorbiculari vel elongato, basi cuneato-flabellari, ambitu acuto, repandulo; superne glabriusculo, scruposo-ruguloso et passim noduloso, leviter concentrice zonato; contextu pallido; hymenio stramineo, poris breviusculis (3–4 mm.), minimis, rotundis, dissepimentis tenuibus; sporis hyalinis, ellipsoideis, levibus, $6 \times 4\ \mu$.

Hab. Ad truncos vetustos, Bonhomme Valley (1200 ft.).

Rigid when dry, 3–4 in. from margin to base, 5–7 in. long. Allied in habit and structure of the hymenium to *P. occidentalis* Kl., but differing in the glabrous, nodulose, whitish pileus.

*P. xanthopus* Fr. Richmond Valley.
*P. velutinus* Fr. Mount St. Andrew.
*P. sanguineus* Mey. Morne Garu Mts. A series of specimens were collected showing a complete sequence from the typical red condition to a perfectly white form, due to bleaching.
*Poria tephropora* Mont. Government House.
*P. Ravenalæ* Berk. Morne Cochon (1200 ft.).
*Favolus granulosus* Lév. Government House.
*Laschia pezizæformis* Berk. Mount St. Andrew.

**Merulius Elliottii,** sp. n. (Plate 322, figs. 18, 19). Effusus; subbyssoideus, totus resupinatus, tenuis, margine tomentoso, flavido, extus intusque croceus; hymenio obsolete gyroso-plicato; sporis ellipticis, hyalinis, $3 \times 1{\cdot}5\ \mu$.

Hab. Ad arbores emortuas, Richmond Valley.

Very thin, texture rather byssoid, yet subgelatinous when moist, the wrinkles or folds of the hymenium very vague. Near to *M.*

*aureus* Fr., but distinguished by the obsolete folds of the hymenium, and the very small, elliptical spores.

**Hydnum artocreas** Berk. in Herb. Kew. Subiculo determinato, effuso, coriaceo, arcte adnato, ligneo-pallescente; margine crassiusculo dilutiori, subinde libero; aculeis confertissimis, compressis, passim connatis, lateribus sub lente asperis, concoloribus; sporis subglobosis, hyalinis, 3–4 $\mu$ diam.

Hab. Ad ligna cariosa. Richmond Valley.

The specimens from St. Vincent agree exactly with a specimen in Berkeley's herbarium, named as above, but not, so far as I have been able to ascertain, described. Entirely resupinate, forming patches 3–5 in. long by 1 in. or more broad.

**Corticium papyraceum,** sp. n. (Plate 323, figs. 35, 36, 39). Longitudinaliter effusum, membranaceum, valde tenue, indeterminatum, albidum, senectute pallide ochraceum, siccum rugoso-incisum; sporis hyalinis, oblongo-cylindraceis, lævibus, 4 × 1·5 $\mu$.

Hab. Supra corticem ramorum dejectorum. Mount St. Andrew.

With the habit and general appearance of *C. lacteum*, Fr., but distinguished by becoming cracked and torn when dry, and also by the much smaller spores.

*Hirneola polytricha* Mont. Government House (900 ft.).
*H. Auricula-Judæ* Berk. Richmond Valley.
*Auricularia mesenterica* Fr. Government House.
*Guepinia spathularia* Fr. Morne Cochon (1200 ft.).

**Lachnea** (Scutellinia) **barbata,** sp. n. (Plate 321, figs. 5–8). Sparsa, sessilis, cupulæformis, demum applanata, aurantio-rubra, margine elevato pilis fuscis septatis vestita; ascis cylindraceo-clavatis, octosporis, sporis monostichis, ellipticis, reticulatis, 30–35 × 15–16 $\mu$, hyalinis; paraphysibus supra clavatis, simplicibus, clavula aurantia.

Hab. Ad truncos putridos. Bonhomme Valley, St. Vincent (*Elliott*, n. 119).

Gregarious; up to 4 lines across. Most nearly allied to *L. stictica* B. & C., a Cuban species; but in the latter the spores only measure 16 × 10 $\mu$, and are very minutely warted, and not reticulated.

*Humaria carbonicola* Berk. Chateau Belair.
*Hypoxylon melanaspis* Mont. Richmond Valley.
*Xylaria anisopleura* Mont. Richmond Valley.
*X. Schweinitzii* B. & C. Morne Cochon (1200 ft.).
*X. cubensis* Mont. Richmond Valley.

**X. citrina**, sp. n. (Plate 322, figs. 20–23). Stromatibus 1–2 cm. alt., gregariis, stipitibus glabris, subteretibus, apice acuto, strato conidiophoro citrino vestitis; clavula prope apicem subglobosa, atra; perithecciis paucis, prominulis; ascis cylindraceis, basi attenuatis, octosporis, paraphysibus filiformibus obvallatis; sporis monostichis, navicularibus, obtusis, inæquilateralibus, fuscis, 10 × 4–5 $\mu$.

Hab. Ad ligna denudata. Morne Cochon.

Allied to *X. pallida*, but quite distinct in the dense, powdery, yellow stratum of conidiophores, and the smaller spores. Conidia globose, pale yellow, 3 $\mu$ diam.

**Hypocrea** (Clintoniella) **epiphylla**, sp. n. (Plate 323, figs. 27-30). Carnosa, hemispherica, sordide ochracea, intus albida, tomento albo basi circumdata; peritheciis ellipticis, ostiolo punctiformi brunneo vix prominulo instructis; ascis cylindraceis; sporis li:e.:ri-fusiformibus, aseptatis, 50–55 × 1–5 $\mu$.

Hab. In foliis *Dieffenbachiæ*. Morne Cochon.

Growing on both surfaces of the leaf, scattered, 1–3 lines across. Known from allied species by the continuous or aseptate elongato-fusiform spores.

**Bertia macrospora**, sp. n. (Plate 321, figs. 9–12). Peritheciis gregariis, sæpe connatis, superficialibus vel semiemersis, ostiolo demum aperto, nigris, rugulosis, glabris, carbonaceis, circiter 0·5 mm. lat.; ascis clavatis, vertice acutatis, octosporis, paraphysatis, sporis subdistichis vel inordinatis, fusiformibus, rectis vel parum curvatis, hyalinis, medio 1-septatis, ad septum constrictis, 28–30 × 6–7 $\mu$.

Hab. In ramis dejectis. Near the Government House (900 ft.).

Densely gregarious, forming more or less circular patches 2–4 mm. across. Allied to *B. italica* Sacc., but known by the less conspicuously rugulose perithecia, the acute apex of the ascus, and the much broader spores.

*Sphærostilbe cinnabarina* Tul. Richmond Valley.

*Chondrioderma difforme* R. Richmond Valley.

*Diachæa leucopoda* R. Morne Cochon.

*Arcyria*. Species indeterminable, as the specimen had been preserved in spirit. Morne Cochon (1200 ft.).

The following species were collected in Grenada by Mr. G. Murray during the Eclipse Expedition, August, 1886:—

*Lenzites protracta* Fr.

**Schizophyllum Murrayi**, sp. n. (Plate 322, figs. 13, 14). Sessile; pileo flabelliformi, inciso-lobato, coriaceo, rigido, sordide ochraceo, tomento brevi, molli obtecto; lamellis radiantibus bifidis, villosis, angustis, rubentibus vel brunneolis. Sporis vinosis, globosis, echinulatis, 9–10 $\mu$ diam.

Hab. Ad truncos. Ins. Grenada.

A very fine and distinct species, 2–3 in. broad, margin subentire or laciniato-incised, thin and soft, becoming rigid when dry. Most closely allied to *S. commune*, but at once distinguished from this and every other described species by the large, globose, echinulate vinous spores. This species is included in the Brit. Mus. Herbarium, under *S. commune*, from Brazil and New Caledonia.

*Fomes lucidus* Fr.
*F. microporus* Fr.
*F. australis* Fr.
*Polystictus tener* Lév.
*P. sanguineus* Mey.
*P. trichomallus* Mont.
*Xylaria cubensis* Mont.

(To be continued.)

# FURTHER NOTES ON HIERACIA NEW TO BRITAIN.

By Frederick J. Hanbury, F.L.S.

(Continued from p. 134.)

Among the Hieracia collected since 1885, and especially during the last three years, many yet remain, which, after consultation with the best authorities and careful inspection of such herbaria as have been available to me, I have been unable to identify as previously recorded species. I will now endeavour to describe in as few words as possible, and under the names by which I propose to designate them, the more important of these forms. I do not here commit myself to a definite sequence, the framing of a systematic list remaining over for a future occasion, neither can I venture to hope that the following descriptions of our new forms will entirely exhaust the category, though I believe they will be found to cover most of the ground. There can be no doubt that the British Hawkweed Flora is very rich, and though the present list of additions may seem long, yet, when compared with the number of species that have been recently described in Scandinavia, it will still be found to be of very modest proportions. My aim throughout has been to restrict it to as small a compass as possible, without knowingly slurring over or amalgamating forms that are obviously distinct. When all is done, there will ever remain a number of isolated specimens which, from geological, climatic, or local influences, are so modified as to defy all attempts at exact definition. Viewing the metamorphoses a single living plant will undergo when removed first from its native mountain ledge to the heavy soil and low elevation of a London garden, and then perhaps to one of the light sandy gardens of Surrey or Hampshire, metamorphoses which, had we not the complete life-history of the plant, would frequently render it entirely unrecognisable, it is impossible but that such a residuum of undefined forms should always remain. To attempt an exact definition of all these is to court contempt for critical botany generally, by making it impossible, and to furnish an excuse to those who, unwilling to devote time and attention to studying the details of form and peculiarities of habit of many a well-defined species, excuse themselves from endeavouring to master the subject by pointing to the ridiculous lengths to which certain enthusiasts have gone. To avoid either extreme should be the aim of critical botany, though the *via media* is by far the more difficult path to take, since nothing is easier than to either lump together all forms which bear a general, if superficial, similarity, or to sit down and describe any specimen that seems a little different to anything else, disregarding its affinities with nearly allied forms, and to leave to future generations the thankless task of endeavouring to decipher a hopelessly involved puzzle.

The following descriptions and notes, though far from complete, will, I hope, sufficiently define and indicate the plants intended, until such time as the several species and varieties here mentioned can be more fully treated in my Monograph now in course of publication.

Hieracium nigrescens Willd. var. gracilifolium, n. var.—Differs from the type and the variety *commutatum* Lindeb. mainly, as the name implies, by its much longer and narrower leaves. These are very acutely toothed, especially towards the base, which is gradually narrowed to a slightly-winged petiole. The ligules are scarcely pilose-tipped; the styles much less fuliginous than in the Cairngorm type. A distinct-looking plant, and the usual form assumed by *H. nigrescens* throughout the Breadalbane range. Although Dr. Lindeberg, at first confirming my determination of *H. nigrescens*, ultimately erased it, adding, "Forma ex Alpinis nova!," I prefer retaining the plant as a variety under this species, and, in so doing, have the entire concurrence of the Revs. E. F. Linton and E. S. Marshall, who are both well acquainted with the plants of this district; indeed, only last autumn the latter sent it from Cam Chreag, labelled, "*Hieracium nigrescens* Willd. var."

**H. centripetale,** n. sp. — The only occasion on which I have collected this species myself was in July, 1886, from Glen Derry, near Braemar, Aberdeenshire. The following year Mr. Druce sent me a parcel of Hieracia for examination, amongst which was a specimen of the same thing from Glen More, Inverness. This specimen had previously been sent to Mr. Backhouse, who marked it thus, "*? nigrescens* [*nigrescens* afterwards crossed through] or *H. senescens*. Styles ?," and it is clearly to this section that the plant belongs. The next specimen that was collected came from Moffat, Dumfriesshire, where it was gathered in 1889 by Mr. Johnston, and sent to me through Mr. Arthur Bennett. In 1890 the Rev. E. F. Linton sent two specimens from "near Moffat, Dumfries," labelled simply, "*Hieracium*, nov. sp." Though here mentioned last on account of their abnormally luxuriant growth, I have little hesitation in referring three specimens collected by the Rev. Augustin Ley in September, 1883, from "Cliffs of Glen Sannox, Arran, Scotland," to the same species. This series, collected over a period of about eight years, and from widely separated localities, all lay in a large collection of doubtful plants until the present spring. I have recently spent many weeks in grouping and sorting this pile, with the result that a large proportion of the specimens seem to fall into their natural positions, and to throw light on each other in a way that exceeded my expectations. *H. centripetale* is about 14–18 in. high; radical leaves ovate to ovate-lanceolate, gradually narrowed at the base, finely dentate or rather evenly scalloped and bearing glandular teeth, and arranged in a semi-prostrate rosette, from the centre of which an almost leafless stem arises. Occasionally there is a large leaf near the base, especially when the stem branches low down, but ordinarily there is a mere bract at the juncture. Heads rather numerous, and borne on slender arcuate peduncles, which towards the apex are densely floccose, setose, and pilose. Involucre campanulate; phyllaries long, narrow and acute, dark with numerous setæ and black-based hairs. The styles are livid, the ligules shortly pilose at the tips. The graceful nearly leafless stem, slender curved peduncles, and bright panicle of showy heads with their dark velvety involucres, render this plant particularly attractive.

H. MARSHALLI Linton, var. CREMNANTHES, n. var.—Closely allied to, though markedly differing from, the type as first collected by the Rev. E. S. Marshall, and described by the Rev. E. F. Linton, from the Clova mountains. The leaves, both radical and cauline, instead of being "moderately dentate below," bear on their margins very long, acute, triangular and frequently hooked teeth, making this beautiful form even more handsome than the type. The styles, too, are more fuliginous. In cultivation the leaves maintain their somewhat narrower and more dentate character, but the plants are clearly seen by their habits and facies to belong to the same species. We gathered the variety first on high rocky ledges, at 2500 ft., on Meall Buidhe, near Inveroran, Argyle, and the Rev. E. S. Marshall has since sent it me from Meall Ghaordie, Perthshire. In 1889, Dr. Lindeberg wrote to me concerning it, "Forma eximia nova ex Alpinis. Ab H. nigrescente distingui debet."

H. CHRYSANTHUM Backh. var. GRACILENTIFORME, n. var.—I apply this name to the English Lake District form of *H. chrysanthum* that Mr. Backhouse included under his *H. chrysanthum* var. *microcephalum*. The plant is conspicuously different from any of the Scotch forms (see Backhouse's *Monograph*, pp. 35–6). In foliage it closely approaches *H. gracilentum*, whilst its dark shortly-hairy involucre and narrow attenuated phyllaries unite it with *H. chrysanthum*. The leaves also, both radical and cauline, are more evenly dentate. I am indebted to the Rev. H. E. Fox for both living and dried specimens. Whilst at first inclined to place it to Fries' *H. atratum*, on closer inspection of a dried series of that species I prefer to follow Backhouse and to keep it under *H. chrysanthum*. When forwarding specimens last year for determination for the *Botanical Exchange Club Report*, the Rev. E. F. Linton wrote, "This appears to me nearer *gracilentum*, which it is in the main; but the phyllaries and their clothing are *chrysanthum*-like. The leaves and pilose-tipped ligules are just *gracilentum*."

**H. sinuans**, n. sp.—The first specimens, gathered by the Rev. E. S. Marshall and myself on July 29th, 1889, were from Ben Laoigh, W. Perth. A few days later, Mr. Marshall again found it in greater beauty and profusion in Glen Falloch, and the fine series he there obtained showed that a new and well-defined species had, so far as Britain was concerned, been found. The following year we again gathered it, not only in Glen Falloch, but also in Corrie Ardran, whilst last year Mr. Marshall obtained it from Ben Chaisteil, near Tyndrum, Argyle, and from Stob Garbh and Cam Chreag, in Perthshire. It will thus be seen that the species occurs pretty generally amongst the important range of hills to the west of the Breadalbanes proper. *H. sinuans* differs from its allies *H. nigrescens* and *H. chrysanthum* in the characteristic form and remarkably wavy surface and outline of both its radical and cauline leaves. In general configuration they vary from narrow-ovate to lanceolate, whilst their rounded, sinuous, forward-pointing teeth, often especially large towards the base, afford an unmistakable facies by which the plant is easily recognised. It varies in height from 6 to 15 in., and bears from 1 to 4 heads; the ligules are of a deep golden-yellow,

almost orange, pilose externally, and more or less so behind the tips. Styles fuliginous. Involucre urceolate-campanulate, very dark. Phyllaries dark green, with very numerous short black-based hairs and setæ. Stem fistular, sparsely floccose. Leaves glabrous above, with scattered white hairs below and on the margins. Two years' cultivation by Mr. Marshall and myself show the distinctive characters to be well maintained, and, in a light Surrey soil, strengthened.

**H. callistophyllum.** n. sp. — This, like the last, appears to be confined to the mountains of Argyleshire and West Perth. Mr. Marshall and I gathered it in July, 1889, from no less than five distinct localities around Kingshouse, from all of which I have it in cultivation; and last year Mr. Marshall sent me a single plant from the cliffs of Stob Garbh. Though probably referable to the *Nigrescentes*, the plant differs conspicuously from its allies in the remarkable and beautiful form of the radical leaves (this suggested the name), in the large size to which it often attains, and in its short, rather blunt, and grey-tipped phyllaries. Stem from 1 to 2 ft. high, often much branched, and bearing from 1 to 18 large showy heads; radical leaves of extraordinary and very characteristic form, the outer ones being almost balloon-shaped, the apex forming a complete semicircle, devoid of teeth, and sometimes even emarginate; whilst the base, armed with coarse outward-pointing teeth, gradually tapers into a long petiole; the inner leaves much more acute and sharply-toothed, all of medium texture, and very prone to turn purple. There is usually one sessile cauline leaf, also very acute and sharply-toothed. Heads from $1\frac{1}{2}$ to 2 in. across. Ligules bright medium yellow, faintly pilose-tipped when young, then quite glabrous. Styles very slightly livid or almost pure yellow. Phyllaries dark green, rather blunt, bearing a tuft of long white hairs at the tips, clothed throughout with white black-based hairs and few setæ, sparingly floccose at the base, densely so as the peduncle is reached. This is a most conspicuous species in cultivation, often forming a dense clump from 3 to 4 ft. high, separating it at a glance from any form of *H. nigrescens* or *H. submurorum*, to both of which Dr. Lindeberg has at times thought it to bear some affinity.

H. ANGLICUM Fr.* var. JACULIFOLIUM, n. var.—A plant apparently confined to the English Lake District. Whilst closely allied to *H. anglicum*, it differs remarkably from any other variety of that species in having the cauline leaf borne on a long straight petiole, and not sessile, both radical and cauline leaves often javelin-shaped, the ligules never properly developed, but always curled up (constituting what continental botanists would call a "*forma stylosa*"). The heads rather more numerous, and peduncles shorter, &c. It was first sent to me in August, 1884, by Mr. W. B. Waterfall, from "Ghyll in Kirk Fell, Cumberland." The specimen was immature,

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* In continuing to use the name "*H. anglicum* Fr." for the purposes of this present paper, I do not wish to imply that I still regard it, having a view to priority, as the correct name to employ. The question involved is one of considerable complexity and difficulty, and may necessitate reference to specimens which as yet I have not been able to see. These remarks may possibly apply equally to the next species, "*H. cerinthiforme* Backh. in litt."

and was put aside to await better material and further light. In July, 1888, Mr. J. A. Martindale sent good mature specimens from "Crevices of Rock Wren Gill Slate Quarry, in the upper portion of the sprint," and from "ledges of limestone rock at the Force, on the stream between Anna Well and Shap (?)." These specimens were seen by Mr. Baker before I received them; one he called "*murorum*," and the other at first "*anglicum*," but this determination he erased, and put a "?" instead. The following month Mr. H. E. Fox sent me some fine fresh plants from "Wet rocks in Ghyll, at the back of Kirk Fell, Ennerdale, at 2000 ft.," since which time I have had the plant in cultivation side by side with ordinary *H. anglicum* from the same locality, and find it to retain its distinctive features. In 1890, Mr. Fox again sent it me from "Dollywaggon Pike, Cumberland, at 2750 ft.," and in the autumn of the same year the Rev. E. F. Linton sent further examples with other Hieracia to be reported on for the Botanical Exchange Club. The specimens were again Mr. Fox's, and were labelled, "Dove Crag, 2000–2500 ft., Fairfield, Westmoreland." On these specimens Mr. Linton made the following pertinent note:—"This came with some genuine *H. anglicum*, from which it differs by smoother stems, phyllaries shorter, tips senescent, more glabrescent petioles (? thinner leaf), stalked (as a rule) st.-leaf, a floccose-edged phyllary; and it is a '*stylosa*' form—no perfect ligule." There appears to be no example of this form in Mr. Backhouse's herbarium. It is noteworthy that it is usually, if not always, associated with the ordinary form of *H. anglicum*, and may possibly be a hybrid, but of this we have as yet no sufficient proof.

H. CERINTHIFORME Backh. in litt.* var. HARTII, n. var. — Mr.

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* The discovery of this extreme form removes all doubt from my mind as to the propriety of specifically separating *H. cerinthoides* $\alpha$. of Backhouse from his forms $\beta$. and $\gamma$. So long ago as the autumn of 1887 I corresponded with him on the forms of "*H. anglicum*," when he wrote of his own accord, "I sometimes half suspect that *my H. cerinthoides* $\alpha$., from the Clova and Braemar district, is not specifically identical with *my H. cerinthoides* $\beta$. (which latter is Babington's *H. anglicum*, and well so named). I think that his *anglicum* and my *H. cerinthoides* $\gamma$. are certainly varieties of the same species; but I feel a little doubtful about the other." The following month he again wrote on the subject, "I feel no doubt that the *H. cerinthoides* $\beta$. and $\gamma$., of my monograph, are forms of one species, which I should now call '*H. anglicum* $\alpha$. and $\beta$.' Whether my '*cerinthoides* $\alpha$.' (of the monograph) is *specifically* the same as these, I have some doubt; nevertheless I think it is safest to regard it as such, and to call it var. *cerinthiforme*." On the authority of the above extracts, I introduced the "var. *cerinthiforme* Backh. in litt." into the 8th edition of the *London Catalogue*, and I trust that I may not be charged with any breach of the rules of botanical nomenclature if I still retain Mr. Backhouse's name as the author of "*H. cerinthiforme*" when used as a specific rather than varietal name. To retain the form I am here describing under the same specific name as the ordinary forms of *H. anglicum* Fr. would be to violate common sense, though I am prepared to admit that specimens exist which it may be difficult to allocate with certainty to either species; but this remark applies quite as much to forms which appear to be equally referable to either *anglicum* or *iricum*, yet no one would question the specific differences of these plants, and in nine cases out of ten there is not the slightest difficulty in separating them. I have endeavoured to give full weight to Backhouse's remarks on pp. 38 and 39 of his *Monograph;* his later letters, however, show how much he was prepared to modify his earlier opinions.

H. C. Hart first drew my attention to this variety, which he discovered many years ago on Slieve League, Co. Donegal. The original specimens were by no means carefully dried, and I referred them at the time to *H. anglicum* Fr. var. *cerinthiforme* Backh. in litt. (of the 8th edition, *London Catalogue*). Last summer I had the opportunity of visiting this mountain in Mr. Hart's company, and found the plant in profusion and just coming into flower; indeed, it was *the* Hieracium of the mountain. Though nearer to *H. cerinthiforme* than to any other previously named form, it is yet so distinct in many particulars as to fully warrant a fresh varietal name. As the plant reaches maturity the obovate radical leaves almost or quite disappear, whilst from three to five large ovate or obovate, acute, entire or minutely and acutely toothed, sessile and strongly amplexicaul stem-leaves alone remain. The broad and rather obtuse, green, lax, softly hairy and pilose-tipped phyllaries afford a further very distinctive character.

(To be continued.)

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# ADDITIONAL NOTES ON THE MARINE ALGÆ OF THE CLYDE SEA-AREA.

By E. A. L. Batters, B.A., LL.B., F.L.S.

During the period which has elapsed since the appearance of my 'Algæ of the Clyde Sea-area' (*Journ. Bot.* 1891, 209, 229, 273), the Committee formed for the investigation of the marine flora of Western Scotland has been actively employed pursuing its work of exploration. Shore-collecting has been systematically carried on, and through the kindness of Dr. John Murray, who on several occasions in July and August put the steam yacht 'Medusa' at the disposal of the Committee, dredging operations have to some extent been undertaken. The work of exploration was commenced by Miss E. Barton in June, and was continued during July, August, and part of September by her, Prof. T. King, Miss Carruthers, Mr. Cormack, Mr. Rankin, Mr. Wippell, Mr. Holmes, and myself. The localities most carefully worked were the islands of Great and Little Cumbrae by myself and party, and the coast of Ayr between Saltcoats and Fairlie by Mr. Holmes. At short intervals since September till the present time Prof. T. King and, more recently, Mr. F. G. Pearcey have examined various portions of the coast, and sent to me for identification whatever they found. I am, therefore, responsible for the correctness of all the names attached to the species recorded in this list, with the exception of a few plants gathered and identified by Mr. Holmes, as well as for the localities to which no other name is attached. Several local collectors have also sent me their collections for examination; it is therefore hoped that the present paper, with the previous list, completes the enumeration of the algæ known to inhabit the Clyde sea-area. As a result of the work undertaken by the Committee, the following

twenty species and varieties have been added to the British Flora :— *Chlorochytrium dermatocolax*, *Protoderma marinum*, *Ulvella lens*, *Monostroma fuscum*, *Acrochæte repens*, *Chætomorpha linum* f. *pulvinata*, *Ostreobium Queketti*, *Streblonema sphæricum*, *Leptonema fasciculatum*, *Ascocyclus fœcundus*, *A. fœcundus* f. *seriata*, *A. balticus*, *Ralfsia pusilla*, *Chorda tomentosa* f. *subfulva*, *Ascophyllum Mackaii* f. *Robertsoni*, *Erythrotrichia carnea* f. *investiens*, *Conchocelis rosea*, *Wildemania miniata* f. *tenuissima*, *Antithamnion boreale*, *Lithothamnion corallioides*, *L. colliculosum*. Of these, five belong to genera which were not previously represented in the British list, and one—*Conchocelis rosea*—is the type of a genus new to science. In addition to those already mentioned, fifty-seven species previously known to occur in Britain, but not recorded from the Clyde sea-area, have been added to the flora of the district, and many additional localities for species, which are incorporated in the following list, have been ascertained. I trust, therefore, that a sound foundation has been laid for any subsequent investigations.

## Cyanophyceæ.

*Dermocarpa prasina* Born. Epiphytic on *Gelidium crinale* and *Rhodochorton Rothii*. Kames Bay, Cumbrae; and Kilchattan Bay, Bute.

*D. violacea* Crn. Epiphytic on *Fucus vesiculosus*. Gare Loch, *F. G. Pearcey*.

*D. Schousbœi* Born. Epiphytic on *Rhodochorton Rothii*. Kames Bay, Cumbrae, *D. Robertson*.

*Hyella cæspitosa* Bornet & Flah. Cumbrae and Bute. Between Saltcoats and Fairlie, *E. M. Holmes*.

*Gonimotrichum elegans* Le Jol. Farland Point, Cumbrae.

*Phormidium papyraceum* Gom. Fintry Bay, Cumbrae.

*Hydrocoleum lyngbyaceum* Kütz. f. *rupestris* Kütz. Fintry and Kames Bays, Cumbrae.

*Mastigocoleus testarum* Lagerh. Fintry Bay, Cumbrae. Lamlash Bay, Arran. Between Saltcoats and Fairlie, *Holmes*.

*Merismopædia glauca* Näg. Kames Bay, Cumbrae.

## Chlorophyceæ.

*Chlorochytrium inclusum* Kjellm. Endophytic in *Dilsea edulis*. Cumbrae.

**C. dermatocolax* Rke. Endophytic in the frond of *Polyides rotundus*. Cumbrae, *Boodle*. Gare Loch.

*Prasiola stipitata* Suhr. Cumbrae and Row, Gare Loch. Loch Goil, *Pearcey*.

**Protoderma marinum* Rke. Bell Bay, Cumbrae.

**Ulvella lens* Crn. Kames Bay, and Little Cumbrae.

*Pringsheimia scutata* Rke. Ardrossan, *King*.

**Monostroma fuscum* Wittr. Fintry Bay, Cumbrae.

*M. Blyttii* Wittr. Kames Bay, Cumbrae.

*Capsosiphon aureoleus* Gobi. Kames, Bell and Fintry Bays, Cumbrae. Seamill, *Holmes*.

*Percursaria confervoides* Foslie = *Diplonema confervoides* Rke. Kames Bay, Cumbrae.

*Enteromorpha compressa* Grev. Gare Loch, *Rankin & Cormack.* Rothesay, *King.* Loch Goil, *Pearcey.*

*E. percursa* Ag. Farland Point, Cumbrae. Loch Ranza, *Robertson.*

*E. linza* J. Ag. Hawk's Net, Bute. Rothesay and Ardrossan, *King.*

*E. micrococca* Kütz. *β. tortuosa* J. Ag. Farland Point and Kames Bay, Cumbrae.

*E. minima* Näg. Kames Bay, Kepple Pier, Cumbrae, *Barton.*

*E. marginata* J. Ag. Kames Bay.

*Ulva lactuca* Le Jol. Gare Loch, *Rankin & Cormack.* Ardrossan and Fairlie, *King.* Heads of Ayr, *Mathews.* Loch Goil, *Pearcey.*

*Ulothrix implexa* Kütz. Farland Point, Cumbrae.

**Acrochæte repens* Pringsh. In the frond of *Leathesia difformis.* Cumbrae.

*Bulbocoleon piliferum* Pringsh. In the fronds of *Leathesiæ, Chordariæ,* &c. Cumbrae. West Kilbride, *Holmes.*

*Entoderma viride* Lagerh. In the frond of *Delesseria sinuosa.* Dredged from 8–10 fathom-water off the Tan Buoy, Cumbrae.

*E. Wittrockii* Wille. In the frond of *Ectocarpus confervoides* and *E. pusillus.* Farland Point, Cumbrae.

*Urospora penicilliformis* Aresch. Ardrossan, *King.* Heads of Ayr, *Mathews.*

*U. flacca* Holmes & Batt. Ardrossan, *King.* Whale Loch, Gare Loch, *Pearcey.*

*Chætomorpha tortuosa* Kütz. Fintry Bay, Cumbrae. Loch Ranza, *Robertson.*

*C. LINUM Kütz. f. PULVINATA, nova forma. This variety of *C. linum* forms intricately interwoven cushion-like masses, not widely spreading fleecy webs, as in the typical form. It grows entangled among *Corallinæ* and other algæ, entirely covering them with its yellowish green fronds. Unlike the typical form, this variety grows in tide pool among the rocks at about half-tide level, and in places where there is no admixture of fresh water—not on mud in brackish water. There is no important difference between the typical form and this variety in respect to width of filaments and length of joints; if anything, the variety is rather the more slender of the two.

*Rhizocloninm tortuosum* Kütz. Portincross, *Holmes.*

*R. riparium* Harv. Rothesay, *King.*

*Cladophora hirta* Kütz. Farland Point, Cumbrae.

*C. utriculosa* Kütz. *β. lætevirens* Hauck. Rothesay, *King.* Gare Loch, *Pearcey.*

*C. rupestris* Kütz. Rothesay, *King.* Heads of Ayr, *Mathews.* Loch Goil, *Pearcey.*

*C. albida* Kütz. Fintry Bay, Cumbrae.

*C. Balliana* Harv. Fintry Bay, Cumbrae.

*C. lanosa* Kütz. Fintry Bay. Loch Goil and Gare Loch, *Pearcey.*

*Gomontia polyrrhiza* Born. & Flah. Fintry Bay, Cumbrae, Gare Loch. Between Saltcoats and Fairlie, *Holmes.*

**Ostreobium Queketti* Born. & Flah. Fintry Bay, Cumbrae, and Gare Loch. Minnard Narrows, Loch Fyne, *Turbyne.*

*Bryopsis plumosa* Lam. Little Cumbrae, *Barton.*

*Vaucheria sphærospora* Nordst. f. *dioica* Rosenv. Seamill, *Holmes*. *Codium tomentosum* Stackh. Little Cumbrae, *Cormack & Rankin*.

PHÆOPHYCEÆ.

*Desmarestia viridis* Lam. Little Cumbrae, *Barton*. Fairlie, *King*.

*D. aculeata* Lam. Upper Loch Fyne, *Turbyne*. Ardrossan, *King*. Heads of Ayr, *MacGregor & Mathews*. Gare Loch, *Pearcey*.

*Dictyosiphon fæniculaceus* Grev. f. *hispida* Kjellm. Fairlie, *Holmes*.

*D. hippuroides* Kütz. Fintry, Bell, and Kames Bays, Cumbrae. Fairlie, *Holmes*. Whiting Bay, Arran, *Patterson*.

*D. mesoglœa* Aresch. Kilchattan Bay, Bute. Fairlie, *Holmes*.

*D. chordaria* Aresch. Farland Point, Cumbrae. Fairlie and Portincross.

*Stictyosiphon subarticulatus* Hauck. Fintry and Kames Bays, Cumbrae.

*Punctaria latifolia* Grev. f. *laminarioides* Holmes & Batt. Fintry Bay, Cumbrae.

*Streblonema fasciculatum* Thur. In the fronds of *Castagnea zosteræ* and *C. virescens*. Kames Bay. Fintry Bay.

**S. sphæricum* Thur. In the fronds of *Mesoglœa vermicularis*. Fairlie, *Holmes*. Kames Bay, Cumbrae.

*Ectocarpus repens* Rke. On *Ceramium rubrum*. Farland Point.

*E. irregularis* Kütz. Seamill, *Holmes*.

*E. globifer* Kütz. = *E. insignis* Crn. On the fronds of *Castagnea Griffithsiana*. Lamlash Bay.

*E. arctus* Kütz. On *Zostera*. Kames Bay, *Carruthers*. Fintry Bay. Between Saltcoats and Fairlie, *Holmes*.

*E. confervoides* Le Jol. Loch Goil, *Pearcey*. Little Cumbrae, *Barton*.

*E. Landsburgii* Harv. Kyles of Bute.

*Pylaiella litoralis* Kjellm. Gare Loch, *Cormack & Rankin*. Rothesay and Ardrossan, *King*. Loch Goil, *Pearcey*.

*P. litoralis* f. *compacta* Kjellm. Seamill, *Holmes*.

*P. litoralis* f. *ferruginea* Kjellm. Farland Point, Cumbrae, *Boodle*.

*Arthrocladia villosa* Duby. Lamlash.

*Myriactis pulvinata* Kütz. On the receptacles of *Halidrys siliquosa!* Fintry Bay, Cumbrae.

*M. Areschougii* = *Elachista Areschougii* Crn. On *Himanthalia lorea*. Farland Point, Cumbrae.

If *Myriactis* is retained as a valid genus, characterised by the absence of paraphyses, and the entire or partial immersion of the basal portion of the parasite in the thallus of the host plant, then both *Elachista Areschougii* Crn. and *E. stellulata* Aresch. must be removed to it. With regard to the latter species, what Harvey has figured (*Phyc. Brit.* tab. 261) and described as "paranemata with short articulations" are really gametangia, as there are no true paraphyses in this species. Areschoug correctly figures the sporangia, and M. C. Sauvageau, in his very interesting paper, 'Sur

quelques Algues phéosporées parasites,'† has proved that the plant is a true parasite.

*M. stellulata* = *Elachista stellulata* Aresch. Lamlash Bay and Portincross.

*Elachista Grevillei* Arnott. Cumbrae. Seamill, *Holmes*.

*E. fucicola* Fries. Little Cumbrae, *Barton*. Fintry Bay (on *Ralfsia verrucosa!*). Heads of Ayr, *Mathews*. Gare Loch, *Cormack & Rankin*.

*Halothrix lumbricalis* Rke. Kames Bay, Cumbrae.

**Leptonema fasciculatum* Rke. Kames Bay, Cumbrae.

*Sphacelaria cirrhosa* Ag. Loch Goil, *Pearcey*.

*S. cirrhosa* f. *ægagophila* Ag. Heads of Ayr, *Mathews & MacGregor*. Fairlie, *King*.

*S. plumula* Zan. Lamlash Bay.

*Chætopteris plumosa* Kütz. Portincross.

*Cladostephus spongiosus* Ag. Kilchattan and Ardrossan, *King*. Loch Goil, *Pearcey*.

*C. verticillatus* Ag. Heads of Ayr, *Mathews*.

*Stypocaulon scoparium* Kütz. Rothesay, *King*.

*Ascocyclus reptans* Rke. Fintry Bay, Cumbrae; and Kilchattan Bay, Bute. Gare Loch and Loch Goil, *Pearcey*.

**A. fœcundus* Rke. Kames Bay, Cumbrae (on *Laminaria saccharina*).

*A. fœcundus* Rke. f. *seriata* Rke. Kames Bay, Fintry Bay, and Bell Bay, Cumbrae.

*A. orbicularis* Mag. Fintry and Kames Bays, Cumbrae. Kilchattan Bay, Bute. Portincross and Seamill, *Holmes*.

**A. balticus* Rke. On *Ceramium rubrum*. Farland Point, Cumbrae.

**? Ralfsia pusilla* = *Stragularia pusilla* Strömf. On *Laminaria saccharina*. Kames Bay.

*R. clavata* Crn. Kames Bay, Cumbrae. Lamlash Bay, Portincross, Kyles of Bute, &c. Between Saltcoats and Fairlie, *Holmes*. Ardrossan, *King*. Gare Loch and Loch Goil, *Pearcey*.

*R. verrucosa* Aresch. Loch Goil, *Pearcey*.

*Spermatochnus Lejolisii* Rke. Fairlie, *Holmes*.

*Chordaria divaricata* Ag. Fairlie, *Holmes*.

*C. flagelliformis* Ag. Gare Loch and Little Cumbrae, *Cormack & Rankin*. Rothesay, *King*.

*Mesogloia lanosa* Crn. Lamlash Bay, in 8–10 fathom-water.

*Castagnea contorta* Thur. Fairlie, *Holmes*.

*C. zosteræ* Thur. Kames and Fintry Bays. Seamill, *Holmes*.

*C. Griffithsiana* J. Ag. Lamlash Bay. Fairlie, *Holmes*.

*Phyllitis zosterifolia* Rke. Portincross, *Holmes*.

*P. fascia* Kütz. Ardrossan, *King*.

*Scytosiphon lomentarius* J. Ag. Heads of Ayr, *Mathews*.

**Chorda tomentosa* f. *subfulva* Foslie. Cumbrae, *Robertson*.

*Laminaria saccharina* Lamx. Gare Loch, *Cormack & Rankin*. Rothesay, *King*. Loch Goil, *Pearcey*.

*L. digitata* Edm. Ardrossan, *King*.

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† *Journal de Botanique*, 1892.

*L. hyperborea* Foslie. Kames, Bell, and Fintry Bays, Cumbrae; and Kyles of Bute.

*Aglaozonia reptans* Kütz. Lamlash Bay. Loch Ranza, *Robertson*.

*Fucus ceranoides* L. Loch Goil, *Pearcey*.

*F. platycarpus* Thur. Farland Point, Fintry and Bell Bays, Kilchattan Bay, and Gare Loch.

*F. vesiculosus* L. Gare Loch, *Pearcey*. Heads of Ayr, *Matheus*.

*F. serratus* L. Gare Loch and Loch Goil, *Pearcey*.

**Ascophyllum nodosum* Le Jol. Heads of Ayr, *Mathews*. Gare Loch and Loch Goil, *Pearcey*.

A. Mackaii Holmes & Batt. f. Robertsoni, nov. var. Loch Ranza, Arran, *Robertson*. This variety, which is the form found in Skye, Orkney, and other parts of Scotland, differs from the typical state of the species in the entire absence of air-vessels, the flattened frond, and the very irregular branching. In fertile specimens the receptacles are *terminal on the ordinary branches*, or, as in the typical form, on lateral, deciduous shoots, borne near the base of the frond. The plant grows in large tufts as big as a man's head, and nearly globular; it has never been found attached to anything. I have called the variety after Mr. David Robertson, who has done so much to increase our knowledge of the marine flora of the Clyde sea-area, and who alone has gathered this variety within its limits.

*Pelvetia canaliculata* Dcne. et Thur. Heads of Ayr, *Mathews*. Rothesay, *King*. Gare Loch, *Pearcey*.

*Halidrys siliquosa* Lyngb. Ardrossan, *King*. Loch Goil, *Pearcey*.

## Rhodophyceæ.

**Erythrotrichia carnea* J. Ag. f. *investiens* Hauck. On *Dictyota dichotoma*. Lamlash Bay.

**Conchocelis rosea* Batt.† Cumbrae.

*Porphyra ciliaris* Crn. Between Saltcoats and Fairlie, *Holmes*.

*P. coccinea* J. Ag. On *Desmarestia aculeata*. Farland Point, Cumbrae.

*P. leucosticta* Thur. Farland Point and Kames Bay, Cumbrae. Between Saltcoats and Fairlie, *Holmes*.

*P. laciniata* Ag. f. *umbilicalis*. Portincross, *Holmes*. Gare Loch, Ardrossan, Rothesay, Loch Goil, &c.

*Wildemania miniata* Foslie. Off Hawk's Neb, Bute, in 7½–10 fathom-water.

*W. miniata* Foslie, f. *amplissima* Foslie; *f. *tenuissima* Foslie; f. *typica* Foslie. Cumbrae. Between Cumbrae and Little Cumbrae, *Robertson*.

*Chantransia secundata* Thur. Kames Bay. Between Saltcoats and Fairlie, *Holmes*. Ardrossan, *King*.

*Nemalion lubricum* Duby. Portincross, *Holmes*.

*Choreocolax Polysiphoniæ* Reinsch. Great and Little Cumbrae. Between Saltcoats and Fairlie, *Holmes*.

*Harveyella mirabilis* Schmitz & Rke. Fairlie, *King*.

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† For a description and figure of this plant, see *Phycological Memoirs*, part i.

*Gelidium crinale* J. Ag. Cumbrae, and Bute. Between Saltcoats and Fairlie, *Holmes*. Rothesay, *King*.

*Chondrus crispus* Stackh. Gare Loch. Heads of Ayr, *Mathews*. Rothesay, *King*. Loch Goil, *Pearcey*.

*Gigartina mamillosa* J. Ag. Gare Loch, *Barton*. Rothesay, *King*. Loch Goil, *Pearcey*.

*Phyllophora Traillii* Holmes & Batt. Kilchattan Bay, Bute.

*P. membranifolia* J. Ag. Kilchattan Bay, Bute. Ardrossan, *King*. Loch Goil, *Pearcey*.

*Ahnfeltia plicata* Fries. Gare Loch, *Cormack & Rankin*. Rothesay, *King*. Heads of Ayr, *Mathews*.

*Cystoclonium purpurascens* Kütz. Kilchattan. Seamill, *Holmes*. Heads of Ayr, *Mathews*. Loch Goil, *Pearcey*.

*Sphærococcus coronopifolius* Grev. Heads of Ayr, *Mathews*.

*Rhodymenia palmata* Grev. Ardrossan, *King*. Gare Loch, *Pearcey*.

*Plocamium coccineum* Lyngb. Heads of Ayr, *Mathews*.

*Delesseria alata* Lamx. Rothesay, *King*. Heads of Ayr, *Mathews*. Loch Goil, *Pearcey*.

*D. sinuosa* Lamx. Loch Goil and Gare Loch, *Pearcey*.

*Hydrolapathum sanguineum* Stackh. Ardrossan, *King*. Heads of Ayr, *Mathews*. Gare Loch and Loch Goil, *Pearcey*.

*Bonnemaisonia asparagoides* Ag. Upper Loch Fyne, *Turbyne*.

*Rhodomela subfusca* Ag. Kilchattan. Fairlie, *King*. Gare Loch, *Pearcey*.

*R. lycopodioides* Ag. Rothesay, *King*.

*Polysiphonia urceolata* Grev. Kilchattan Bay, Bute. Gare Loch and Loch Goil, *Pearcey*.

*P. elongella* Harv. Seamill, *Holmes*.

*P. elongata* Grev. Heads of Ayr, *Mathews*. Loch Goil, *Pearcey*.

*P. fastigiata* Grev. Rothesay, *King*. Heads of Ayr, *Mathews*. Gare Loch and Loch Goil, *Pearcey*.

*P. nigrescens* Grev. Ardrossan, *King*. Gare Loch and Loch Goil, *Pearcey*.

*P. parasitica* Grev. Lamlash. Upper Loch Fyne, *Turbyne*.

*P. Brodiæi* Grev. Portincross, *Holmes*.

*Dasya coccinea* f. *tenuis* J. Ag. Upper Loch Fyne, *Turbyne*.

*Rhodochorton Rothii* Näg. Rothesay and Ardrossan, *King*.

*Plumaria elegans* Schmitz. Rothesay, *King*.

**Antithamnion boreale* Kjellm. In 8–10 fathoms off Tan Buoy, and Lamlash Bay.

*Ceramium diaphanum* Roth. Loch Goil, *Pearcey*.

*C. rubrum* Ag. Gare Loch and Loch Goil, *Pearcey*.

*C. acanthonotum* Carm. Heads of Ayr, *MacGregor*.

*Dumontia filiformis* Grev. Gare Loch and Loch Goil, *Pearcey*.

*Furcellaria fastigiata* Lamx. Rothesay, *King*. Heads of Ayr, *Mathews*.

*Polyides rotundus* Grev. Loch Goil, *Pearcey*.

*Petrocelis cruenta* J. Ag. Loch Goil, *Pearcey*.

*Cruoria pellita* Lyngb. Loch Goil, *Pearcey*. Kilchattan Bay, Bute.

*Peyssonnelia Dubyi* Crouan. Kyles of Bute and Lamlash. Loch Ranza, *Robertson*.

*Hildebrandtia prototypus* Nardo, f. *rosea* Kütz. Kilchattan Bay. Rothesay, *King*. Gare Loch and Loch Goil, *Pearcey*.

*Melobesia corticiformis* Kütz. Cumbrae. Between Saltcoats and Fairlie, *Holmes*.

*M. farinosa* Lamx. Cumbrae and Lamlash.

*M. Laminariæ* Crn. Fintry and Kames Bays, Cumbrae. Between Saltcoats and Fairlie, *Holmes*.

*M. Corallinæ* Crn. Kames and Fintry Bays. Between Saltcoats and Fairlie, *Holmes*.

*Lithophyllum Lenormandi* Rosan. Fintry and Bell Bays, Cumbrae. Rothesay, *King*. Loch Goil, *Pearcey*.

**Lithothamnion corallioides* Crn. Dredged from 6–10 fathoms off the Tan Buoy, Cumbrae, and in the Kyles of Bute.

*L. CORALLIOIDES Crn. f. SUBSIMPLEX, nov. var. Off the Tan Buoy, Cumbrae, in 8–10 fathom-water. A very curious variety, characterised by the almost entire absence of lateral branches, the whole frond being nearly simple, and either straight or angularly bent.

**L. colliculosum* Foslie. Off Tan Buoy, Kyles of Bute, Gare Loch, in 8–10 fathom-water.

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## THE DEPTFORD PINK.

By James Britten, F.L.S.

The Deptford Pink may be included among the manufactured names which have come into popular use. It is found in our principal text-books, such as Babington's *Manual*, Bentham's *Handbook*, and the *Students' Flora*, and probably all British botanists would concur with these authors in assigning it to *Dianthus Armeria*. The English name dates from 1633, when Johnson, in his edition of Gerard (p. 594), gave an admirable figure of the plant (from Lobel's *Icones*, i. 440), which he named "‡ *Caryophyllus pratensis*, Deptford Pinke."

It is, however, clear that this is not the plant which Gerard had in view when he described the pink abundant in his day near Deptford. When compiling our *Dictionary of English Plant-names*, the Deptford Pink came under review, and we then pointed out (p. 148) that Gerard's description, which Johnson's figure was intended to illustrate, applied rather to *D. deltoides*. In collating Mr. W. A. Clarke's notes on our 'First Records,' the matter has again been brought under my notice, and I think it may be well to make it clear.

I will first give Gerard's description of the pink which he knew as growing at Deptford: it runs as follows:—

"There is a Wilde creeping Pinke, which groweth in our pastures neere about London, and other places, but especially in the great field next to Detford, by the path side as you go from Redriffe to Greenewich, which hath many small tender leaves, shorter than any of the other wilde Pinkes; set upon little tender stalks, which lie flat upon the ground, taking holde of the same in

sundrie places, whereby it greatly encreaseth; whereupon doth growe little reddish flowers. The roote is small, tough, and long lasting."—*Herbal*, p. 476.

It will at once be obvious that this description is entirely inapplicable to *D. Armeria*, while it agrees very well with *D. deltoides*. Johnson, as has been already said, adds a figure of *D. Armeria*, but simply reproduces Gerard's description. This is the more strange as I think there can be no doubt that he knew the plant. In his *Mercurius Botanicus* (1634) he correctly cites this figure as a synonym for Lobel's *Armeria syl. altera caliculo foliolis fastigiatis cincto*, and adds, "collibus et nonnullis pascuis."

Parkinson (*Theatrum*, 1640, pp. 1338–9) again describes *D. deltoides*,—apparently in two forms,—and correctly points out that Johnson's figure does not represent his plant. His description runs thus:—

"*Caryophyllus pratensis noster major*. — Our greater wild field Pincke. — Wee have in many places of our Land growing wild a small kinde of Pincke, as I may so call it, and especially by Deptford and Rederiffe, which spreadeth much oftentimes, and rooting by the branches as it groweth with small short greene leaves next the ground, and by couples on the stalks, with small reddish Pincke-like flowers on the toppes. Of this sort also there is a lesser, growing among the thicke grasse in our medowes about London, namely towards Totnam Court, whose roote is so small and threddy, that it will not abide transplanting, having very slender stalkes, and smaller, shorter, and greener leaves set thereon then in the former, the flowers also are smaller, and of a cleare red shining colour sometimes, but one of a stalke, and sometimes more especially under hedges and bushes that may defend it by the shadow. Of neither of both these have I any true figure to exhibite here and I am loath to insert Master Johnsons figure, because it doth not truely expresse it, as also that it is Lobels figure of a small *Armeria*, which hath leaves among the flowers, which these have not."

The two plants have sometimes been wrongly identified by the authors of local floras. The usually accurate *Flora of Middlesex* cites one of Parkinson's plants for *D. Armeria*, as also Merrett's locality of "Tuddington field." But in each case *D. deltoides*, well known as a Teddington plant,* was, I think, intended; Merrett cites both Johnson's figure and Parkinson's synonym.

We are so used to regarding *D. Armeria* as the Deptford Pink that probably no change in the English name would be either necessary or desirable. The only evidence, however, as it seems to me, that this species ever grew near Deptford is that afforded by Johnson's figure; whether this is sufficient, the compilers of the long-desired Flora of Kent will have to determine, for at the present time it is not likely to occur there.

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* As an illustration of the way in which errors occur in transcribing, it may be noted that in the British Herbarium of the British Museum is a specimen labelled, "near Paddington Dock, Surrey,"—"Teddington Lock" being the locality intended.

# SOME KENT PLANTS OBSERVED DURING 1891.

By the Rev. E. S. Marshall, M.A., F.L.S.

My opportunities for work in this county, last year, were limited to three or four days in early June, and again in mid-September. A few forms hitherto unrecorded for it were, however, obtained, besides one or two other things of sufficient interest to be worth mentioning. An asterisk denotes the supposed novelties.

**Ranunculus Baudotii* Godr. var. *marinus* (Arrh. & Fr.). Ditch near Lydd, towards New Romney. Determined by Mr. H. Groves.

*Polygala calcarea* F. Schultz. By the Pilgrims' Road, near Westwell. Noted from Dover and Hartlip in Mr. Hanbury's MS., through not reported from v.-c. 15 in *Top. Bot.* All the Kent specimens that I have seen are uniformly bright blue.

**Arenaria serpyllifolia* L. var. *Lloydii* (Jordan). Sandhills at Great Stone, between New Romney and Dungeness, associated with var. *glutinosa* Koch; very characteristic.

*Vicia sepium* L. With white flowers, at Westwell.

**Rubus rubricolor* Blox. MS. (*R. erubescens* Wirtg.). Thorndean Woods, near Canterbury. Named by Rev. R. P. Murray, three days after it was collected, from the Surrey plant so determined for him by Dr. Focke. To his eye and mine, it was quite impossible to separate the two.

**R. gratus* Focke. Thorndean Woods, &c.; plentiful. Accepted by Dr. Focke as typical.

**R. Babingtonii* Salter. Heath near Hothfield; a handsome and striking bramble. Determined from two separate gatherings by Dr. Focke.

**R. Bellardi* Whe. var. *dentatus* Blox. About Thorndean Woods, &c., in abundance. Named by Rev. Moyle Rogers.

*Cratægus Oxyacantha* L. var. *oxyacanthoides* (Thuill.). Abundant about Kemsing, on clay.

**Callitriche polymorpha* Lönnroth. Swift ditch, close to Hothfield Station. Leaves larger than in the Shetland and Surrey specimens which I possess. What little fruit there is seems right. Styles very long, erect in flower and young fruit, persistent.

*Epilobium Lamyi* F. Schultz. Roadsides, &c., about Blean and Hoath.

**E. obscurum* × *palustre*. Bogs near Hothfield; also by the ponds, Dungeness.

*Senecio viscosus* L. Very plentiful on the beach at Dungeness; less so, near Lydd. I quite believe it to be indigenous. New to E. Kent.

[*Plantago arenaria* L. On railway ballast near Lydd; one plant. Casual.]

*Salicornia.* Two unusual forms occur near New Romney. The first is decumbent, generally somewhat fan-shaped, much branched, with very short joints, and seems to agree fairly well with the description of *S. appressa* Dumortier, *Opuscules de Botanique*. The second, which was found sparingly, is very distinct-looking. It

grows quite erect, with a strong and woody tap-root, the branches being numerous, thick, and interlaced, and forming a compact bushy mass. I have not yet been able to match it in book-descriptions or herbaria, and doubt its identity with *S. herbacea*, variable as that is. The glass-worts of our S.E. coasts deserve more attention than they have hitherto received.

*Salix aurita* × *Caprea*. Woods N. of Charing; a small form, with unusually distinct style. — **S. aurita* × *cinerea*. Kemsing; Edenbridge.

*Carex distans* L. Inland at Stouting, where it occurs abundantly by a streamlet, associated with *Scirpus Caricis* Retz.

**Glyceria plicata* Fries var. *declinata* (Brébisson). Muddy, boggy ground near Hothfield; very scarce.

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# THE PLANTS OF THE ARAN ISLANDS, GALWAY BAY.

By J. E. Nowers and James G. Wells.

Many notices have from time to time been published of the plants inhabiting these interesting islands, but, with two exceptions, they have been more or less fragmentary. The exceptions are the lists published by Dr. E. P. Wright* and by Mr. H. C. Hart,† which make much greater approach to completeness than do any of their predecessors. In addition to these, Mr. A. G. More, in a Report on the Flora of Inish Bofin,‡ compares the plants inhabiting that island, composed as it is of Silurian schist, with those growing upon the limestone islands of Aran, and states, apparently on the authority of Mr. Hart's List, that ninety-two plants found on Bofin do not occur on Arran.

During a stay of a fortnight on these islands, in June, 1890, the writers made a careful investigation of the plants, more particularly of those on the northern one, and the result has been the discovery of forty-one species new to the Aran Islands, no less than thirteen of which were enumerated by Mr. A. G. More as not known to occur there. Classifying them in accordance with Mr. Watson's types, these additions are:—British type plants, 30; English, 4; Atlantic, 2.

In Dr. Wright's and in Messrs. Hart and More's papers *Senebiera Coronopus* is given as occurring in Aran, whereas *S. didyma* is not recorded, and indeed in the last two is stated not to occur there. We, on the contrary, found *S. didyma* on all three islands, and in abundance on the northern one; and only came across *S. Coronopus* in one spot on the north island. The only probable explanations of this apparent disagreement that we can offer are that *S. didyma* has by some means been since introduced into Aran and has spread

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* *Proceedings Dublin Natural History Society*, Dec. 6, 1866.

† "A List of Plants found in the Islands of Aran, Galway Bay," Dublin, 1875.

‡ *Proceedings Royal Irish Academy*, 1876, p. 553.

with great rapidity, crowding out its fellow species in a remarkable manner; or that there is some error in the earlier observations.

Before proceeding to give the list of our additions, some remarks as to the abundance or otherwise of rare plants recorded by previous observers may not be without interest. The islands are noted for the rayless-flowered form of *Senecio Jacobæa*, but we, though of course rather early, were unable to find any but the normal forms of it. *Helianthemum canum* var. *vineale* was found in fair quantity on the North Island. The glabrous form, variety *Andrewsii*, of *Cerastium arvense* still occurs on Aran, and apparently predominates over the pubescent one, all our specimens being glabrous. *Erodium moschatum* is still to be found on the North Island. A *Ulex* was recorded by Prof. Balfour in 1852, but we came across no trace of any of the species. *Astragalus hypoglottis*, whose sole Irish locality is Aran, was reported from there in 1834, but has apparently not been observed since; we were successful in finding the plant in one spot, a sandy bank near the shore on the North Island, but did not observe it on either of the other islands. *Saxifraga hypnoides* var. *Sternbergii* was found growing plentifully on the North Island. *Gentiana verna* occurred sparingly throughout the islands. *Chlora perfoliata* was found in abundance on the South Island, but we did not observe it on the middle one. *Menyanthes trifoliata* was certainly not growing, at the time of our visit, in the locality given by Mr. Hart; nor could we find any trace of *Orobanche Hederæ*, although recorded by him as being common in all parts of the Great Island. *Ajuga pyramidalis* is another rare plant we were unable to find. *Euphorbia portlandica* was growing plentifully on the shore near Kilronan. *Allium Babingtonii* occurred abundantly on all three islands, and though no doubt a relic of former cultivation, has fallen out of favour, one of the inhabitants informing us that it was too hot to be eaten. *Adiantum Capillus-Veneris* is still to be found in every crevice of the rock, though subject to the depredations of the very occasional Sunday trippers from Galway. It is to be hoped that the improved means of communication effected by Mr. Balfour, though very desirable for other reasons, may not have the effect of exterminating this lovely fern from another of its British haunts. Of other plants previously recorded, we could find no trace of *Ranunculus Lingua*, *Hippuris vulgaris*, *Myriophyllum alternifolium*, or *Arundo Epigejos*.

The list of our additions is as follows, the plants marked with an asterisk being those which Mr. More counted as not occurring in Aran:—

*Ranunculus Ficaria* L. Near Oghil.
[*Alyssum maritimum* L. Near Kilmurvy Quay. Introduced.]
**Senebiera didyma* Pers. Frequent on all three islands. An escape.
[*Brassica campestris* L. Common at Killeany.]
*Malva rotundifolia* L. Kilronan.
*Erodium maritimum* L'Hérit. Near Kilronan.
**Oxalis Acetosella* L. Near Oghil.
*Trifolium medium* L. and *T. striatum* L. Near Black Fort.
[*Medicago sativa* L. Near Kilronan.]

*Chrysosplenium oppositifolium* L. Near Oghil.
[*Sempervivum tectorum* L. Kilronan, planted on tops of houses.]
*Conopodium denudatum* Koch. North Isle.
*Cuscuta Epithymum* Murr. Kilmurvy and Killeany.
*Melampyrum pratense* L. var. *latifolium* (Syme). Dun Oghil.
*Origanum vulgare* L. Near Seven Churches.
*Salix repens* L. Near Cowragh.
*Orchis latifolia* L. Near Dun Aengus.—**O. maculata* L. North Island.
*Ophrys apifera* Huds. Kilronan and Kilmurvy.
*Allium ursinum* L. Near Lough Atalia.
*Juncus Gerardi* Lois. Common on damp ground.
*Typha latifolia* L. var. *media* Syme. Middle Island.
**Potamogeton polygonifolius* Pour. Pool near Onacht.
*Zannichellia palustris* L. Pool near Kilronan.
**Eleocharis palustris* R. Br. North Island.
**Carex pulicaris* L. Near Dun Oghil. — *C. Goodenowii* J. Gay. North Island. — **C. panicea* L. and **C. extensa* Good. Near Dun Aengus.
*Holcus mollis* L. North Island.
*Trisetum flavescens* Beauv. Near Black Fort.
*Avena pubescens* Huds. Near Black Fort. — [*A. strigosa* Schreb. Near Kilronan.]
**Sieglingia decumbens* Bernh. North Island.
**Koeleria cristata* Pers. Frequent on North Island.
**Poa trivialis* L. Near Black Fort.
**Festuca sciuroides* Roth. Killeany.
*Agropyron caninum* Beauv. Near Black Fort.
**Lastræa Filix-mas* Presl. Near Oghil.
*Botrychium Lunaria* Sw. Cowragh.
*Chara aspera* Willd. and *C. vulgaris* L. Kilronan and Killeany.

The localities given are on the North Island, unless otherwise specified.

Of the rarer plants now recorded for the first time, *Erodium maritimum* was met with sparingly between Kilronan and Killeany, and a few plants of *Trifolium striatum* were noticed on the west coast of the North Island near the Black Fort. *Cuscuta Epithymum* occurred in profusion in two sandy fields near the shore, one near Killeany, and the other at Kilmurvy Bay. It covered large patches of ground, and was parasitic on *Lotus corniculatus* and other plants. Though not in flower at the time of our visit, there can be no doubt as to the species. The fields in which it was found showed no signs whatever of cultivation, thus opposing the idea that it may have been introduced with agricultural seeds. *Melampyrum pratense* was found sparingly in a single locality near Dun Oghil. *Ophrys apifera* was sparsely distributed over a moderate area on the North Island; and *Typha latifolia* var. *media* occurred in a solitary, small pool in the rock on the Middle Island. Of *Botrychium Lunaria* only a single specimen was seen, near the shore below Cowragh.

Besides the plants named in the list, a remarkably glabrous form of *Avena pubescens* was met with, and also a very dwarf and

densely downy form of *Bromus mollis*, the latter on the edge of the sea-cliffs at Dun Aengus.

The following ten plants of those in the preceding list are not recorded for District 6 in the *Cybele Hibernica*, but we are unable to ascertain whether, since its publication, they have been recorded for other parts of the same district:—

*Erodium maritimum.*
*Trifolium medium.*
*T. striatum.*
[*Medicago sativa.*]
*Cuscuta Epithymum.*
*Typha latifolia.*
*Zannichellia palustris.*
*Carex extensa.*
*Holcus mollis.*
[*Avena strigosa.*]

In conclusion, we would express our indebtedness to Mr. James Groves for his assistance in naming the Charas, and to Mr. P. B. Mason and Mr. A. G. More for their aid in diagnosing other critical plants.

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## *SHORT NOTES.*

"HIERACIUM ANFRACTIFORME" (p. 18).— When publishing this new species, I was not aware that the name was already in use. Recently I was informed of its occurrence in a Scandinavian list, and Mr. Hanbury has favoured me with a sight of the plant intended. This is No. 43 in H. Dahlstedt's *Hieracia exsiccata*, Fasciculus iii. (1889), and is named, "*Hieracium silvaticum* (L.) Almqu. * *anfractiforme* Almqu." The specimen was collected in Ostergötland, Sweden, in June, 1885, and is certainly near *H. murorum* L., for which some Scandinavian botanists erroneously substitute the name of *H. silvaticum*. My plant is quite a different thing; and I propose to substitute for my original name that of *H. subanfractum*, which, so far as I can ascertain, is not taken up.—EDWARD S. MARSHALL.

GENTIANA AMARELLA L. var. PRÆCOX (p. 153).—I am not surprised to learn that the seeds of this plant often germinate in the autumn, like those of many other annuals. The point I want to make is this, *viz.*, that the difference from type is *normal*, and not due, as Mr. Townsend suggests, to its being injured by grazing; in other words, we have here a *true variety*, and not merely a *state*. Mr. Bennett evidently means to express the same opinion.—EDWARD S. MARSHALL.

RUBUS ANGLOSAXONICUS IN CARNARVONSHIRE.—When at Beddgelert on July 10th of last year, and walking along the road towards Llyn-y-D'dinas, my attention was attracted to several Rubi growing by the way-side, of which I took specimens for subsequent examination. Upon going over these with Mr. J. W. White, he pointed out to me the resemblance between one of them and the specimens that we had gathered the day before at Matlock Bath of the *Rubus* named by Dr. Focke *R. anglosaxonicus*, and afterwards confirmed as such by Prof. Babington. In order that this determination might be verified, I sent my solitary specimen to the Professor, who, with

his usual kindness, has confirmed the opinion expressed by my friend, and has written :—"It is like the *anglosaxonicus* of the *Rub. Exsicc. Danicæ*, No. 41. . . . At present I do not see how to separate it from *Gelertii* of the same fine collection, Nos. 39 and 40; and as *Gelertii* is No. 80 in the original paper, and *anglosaxonicus* 81, I feel bound provisionally to use *Gelertii* as the name. I have authentic specimens of that also."—W. H. PAINTER.

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## *NOTICES OF BOOKS.*

*A Monograph of the Myxogastres.* By GEORGE MASSEE. London: Methuen & Co. 1892. Pp. 367, tab. col. 12. Price 18s.

IF the lichen-gonidia question be excepted, there has been no more exciting controversy in the morphology of the lower organisms than that concerning the nature of the Myxomycetes. It has engaged workers of first class ability, such as De Bary and Cienkowski, and others of less note but excellent performance, and has caused angry passions to rise with almost as great vehemence as the lichen discussion while it lasted. It has attracted the "biologist" especially, and the man who studies the phenomena of life at second-hand has hovered round this question, and explained its difficulties in the unerring way with which we are all familiar. De Bary's brilliant work at the group—it stands out as a masterly performance even from among other labours of this great botanist—attracted shoals of critics and speculators, who raised the usual din, and obscured the issue with as much malignity as if their vested interests or political convictions were involved, instead of a mere matter of investigation. The "chronique scandaleuse" of Botany has few darker pages than those which contain the wilful and shameful distortions of the views of De Bary in this matter, and of Schwendener on the lichen question: and the prejudices thus raised continue to this day.

It is therefore with satisfaction that we find in Mr. Massee's opening pages an even-tempered discussion of De Bary's position, and an analysis of his reasons—a discussion which, if it embodies any misrepresentation of opinions, certainly contains none consciously so presented. It is somewhat hard to ascertain Mr. Massee's own personal view in this matter, but there is no difficulty in making the discovery that De Bary's arguments do not satisfy Mr. Massee's critical judgment, and consequently that he does not approve the exclusion of Myxomycetes from the vegetable kingdom, at all events for the reasons given by De Bary. It is a free country, and the matter is largely one of opinion; and we are content to leave the question as it stands, De Bary's sober statement based on his magnificent work on the one side, and on the other Mr. Massee's statement based on a verbal criticism (a criticism hardly free from a playing with words) and his own considerable personal studies:—"I consider the Myxogastres as illustrating one of the earliest

known attempts at differentiation in the direction that has eventually resulted in the mass of organisms constituting the vegetable kingdom, but having originated from the Flagellatæ, a group more in touch with the animal side of life, the work of developing individuality has been slow, as illustrated by the tardy appearance of cellulose cell-walls, which, as would be expected, is most complete in the newly evolved reproductive phase, itself to a great extent the outcome of a gradual change of environment from aquatic to aerial —but the radical mistake, after having adopted the plant line of development, consisted in the non-development of chromatophores, and retention of the animal mode of nutrition, which in the plant world means parasite or saprophyte. The fungi, a later group, differentiated from ancestors that had already evolved the leading plant characteristics, including cell-walls, chlorophyll, starch, hence in this respect are more typical plants than the Myxogastres; but in the fungi the check to progress was due to the degeneration of chromatophores, already evolved by their ancestors, whereas in the Myxogastres the check was due to their inability to differentiate these essentials."

If life were still before us (instead of an editor with his "abhorred shears"), it might be a pretty exercise to subject this statement to the verbal analytic process which Mr. Massee applies to De Bary. The main thing to be thankful for in any case is that none of our ancestors, whatever their other enormities may have been, developed chromatophores and took the plant line of evolution. Parasites though we be after the manner of our remotest ancestors, those early Flagellatæ (or others) to which we look back knew a thing or two when they held aloof while their garish neighbours sported chromatophores. The Mycetozoa were an irresolute lot, and tried to compromise matters by taking "the plant line" of business, without the courage of their opinions in the matter of chromatophores, and we see them at this day in the pitiful position where we might have been ourselves. The fungi repented too late—the mischief was more effectually done in their case, and thus we see the futility of mere good intentions—"sed revocare gradum, superasque evadere ad auras, hic labor hoc opus est."

It is refreshing to turn from the gaseous realms of speculation to the solid ground of the systematic treatment of the Myxogastres. After all, this is the business of the monographer. The fashion of our fathers was to lighten the labours of monographing—especially sea-weeds—with outbursts of poetry; but the "romance of science," as it is called, has killed all true sentiment, and given us instead certain sublime theories of descent. It would possibly be worth the trouble—it would certainly be a salutary proceeding—if Mr. Wallace would examine some of these cases of "particular instances" of evolution, and—after holding an inquisition into the methods employed and instituting a comparison of them with the endless pains taken by Mr. Darwin, and his modesty of literary expression—would invite certain modern writers of repute to be heartily ashamed. The blazing ruins of recent speculation are

a threat of impending danger to the work of the honourable and truth-loving pioneers of evolution—at all events to the credit of work at this absorbing subject. However, these remarks are *apropos des bottes*, and we must return to less exciting criticism of Mr. Massee's monograph.

It may at once be said that Mr. Massee is too practised a hand at work of this kind, and too well acquainted with its methods, to produce any work with crying errors of method, with other than a seemly arrangement of its parts. His descriptions are "by the card," and his figures are clever examples of draughtsmanship and colouring—his book, in fact, is possibly all that might be expected from a toiler in the field of these "critical" organisms, as one may be permitted to call them. There is, however,—and this may be a fault incident to the state of knowledge,—a want of finality in the treatment of the species. Finality of course is not the word,—that there cannot be,—and one hesitates to say "up to date." In any case there is accomplished the great work of assembling the forms in order—the order of their description, even if it be not the order of their review. There were immense difficulties to be met and faced, greater obstacles to be overcome, and it is in no spirit of censure that we say Mr. Massee has not reached an ideal in the great work of passing in review the Mycetozoa—the most obscure group in, or allied to, the vegetable kingdom, with the possible exception of the Schizomycetes.

There is one somewhat delicate matter of which it may not be imprudent to take note. There is rather prominent quotation of notes and remarks made on certain specimens by Mr. Lister, who is engaged on a monograph of this group. I freely recognise Mr. Massee's right to quote such remarks, and even to criticise them, but probably it would have been better, having regard to the fact of coming publication by Mr. Lister, to have more briefly referred to these MS. notes, which were, one would say, not apparently written for publication in that form, and were certainly intended as mere herbarium notes of work, of such kind as might be helpful to herbarium officers in the matter of sorting of specimens. Without doubting, it may be repeated, Mr. Massee's clear right to make these quotations, it may yet be thought a subject for regret that he decided on this course. Probably this view has only to be pointed to him to gain his acquiescence in it. It is not brought forward here in other than the most friendly spirit, and by no means cited as a serious blemish on a work which must have cost its author much assiduous labour and creditable investigation. It is published at a very reasonable price, and is a necessary book to the worker at Mycetozoa, be he botanist, zoologist, or hybrid (biologist).

G. M.

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*The Oak:* A Popular Introduction to Forest Botany. By H. MARSHALL WARD, M.A., F.R.S. Kegan Paul, Trench, Trübner & Co. 8vo, pp. 171. Price 2s. 6d.

THE Oak is the subject of the third number of the Modern Science series, edited by Sir John Lubbock. Though entitled "a

popular introduction to forest botany," one chapter only is devoted to the cultivation of the tree, and the book may be better described as a short account in fairly simple language of all that is most interesting in the life of an oak from its starting point as the tiny embryo still protected in the acorn to the stately forest tree which may live a thousand years. There are a goodly number of illustrations, about fifty, many of which we recognise as old friends. The frontispiece is a fine representation of the oak in summer, while the oak in winter forms another plate facing page 8; both are after Rossmässler. The works of R. Hartig, Kny, Luerssen, and Müller have supplied figures of sections of the stem or wood and bark; one of the nicest in the book is that on p. 53, a transverse section of the young stem, after Hartig. The parts are here very well shown, but the explanatory letters have in many cases almost disappeared, or are quite illegible; and we notice the same in many of the borrowed figures, a serious inconvenience when dealing with such complicated structures as sections of wood.

The plan of the book is a series of object-lessons. First the acorn, the fruit with the seed inside, is described, and the parts of the embryo, their structure, and function are clearly explained. Next the seedling and young plant are considered, and successive chapters devoted to the root, the distribution of the tissues in the shoot, the structure of the vascular tissue, and lastly the buds and leaves. Then the parts of the adult tree are discussed in the same order, followed by an account of the inflorescence, flowers, fruit, and seed. A chapter is given to the timber, "its structure and technological peculiarities," another to the cultivation of the tree and the diseases and injuries to which it is subject, and the twelfth and last deals with "the relationships of the oaks, and their distribution in space and time."

The purely botanical part is undoubtedly the best. The correlation of histology and physiology, the explanation of structure by the function of the parts or the organ as a whole is admirable. Theory is avoided, and the facts are clearly stated. We may refer, for example, to the description in Chapter vi. of the leaves and their function as organs of transpiration and assimilation. Moreover, each member is considered not merely as part of the seedling or adult oak, but as a typical plant member. Thus, in dealing with the root, we are told in what respects it is a typical root, while in the comparison of the structure of the seedling and older plant we have an account of the mode of growth in thickness of the ordinary dicotyledonous stem and root.

Interesting biological points are also noticed. The common occurrence of a *Mycorhiza* is referred to, and explained up to date:—"The view is gaining ground that the symbiosis between the fungus and the root is of advantage to the oak. It has even been suggested that the mycelium performs the functions of root-hairs to the root, absorbing water and nutritious material from the soil, and passing them on to the oak, in return for a certain small proportion of organic substance which the latter can well afford."

The chapter on the timber contains much interesting informa-

tion, but is somewhat technical at times; thus such a phrase as "modulus of elasticity" should not be used without explanation. Three specimens of timber grown under different conditions are figured. Chapter xi. contains a short general account of the procedure in the cultivation of the tree. The "natural shape is that of a wide-spreading, short-stemmed mushroom"; this is realised in the open, but the forester, by planting it among other trees, such as beech or spruce which, while keeping the light from the lower parts, will not overtop it, is able to get a long clean stem before the crown extends. The rest of this chapter is taken up with a brief survey of a few of the diseases to which the tree is subject; those mentioned are well illustrated. In the discussion of the relationships of the genus, which, according to DeCandolle, contains something like three hundred species, the general reader will perhaps be surprised to find that the facts of present distribution and the evidence from fossil remains go to show that the "British" oak originated, along with its European congeners, in the far east, and, passing westwards, at last reached Britain, at that time the western extremity of the mainland.

We shall be glad to have more books of this kind dealing with other botanical types.

A. B. RENDLE.

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## *ARTICLES IN JOURNALS.*

*Annals of Botany* (April).—W. A. Setchell, 'Species of *Doassansia*' (2 plates).—D. H. Campbell, 'Prothallium and embryo of *Osmunda Claytoniana* & *O. cinnamomea*' (4 plates).— J. G. Baker, 'Vascular Cryptogamia of Island of Grenada.' — H. M. Ward, 'Characters employed for classifying Schizomycetes.' —W. B. Hemsley, *Melananthus*.— Id., *Trematocarpus*.— E. Bornet, *Ectocarpus fenestratus*.— H. Wager, 'Nuclei of Hymenomycetes.'— A. W. Bennett, 'Algological Notes.'

*Bot. Centralblatt.* (Nos. 16–18). — V. L. Sandoval, 'Zur Kenntniss der Gattung *Roxburghia*' (1 plate). — (No. 18) F. Reinitzer, 'Ueber den Gerbstoffbegriff.' — C. Fritsch, 'Die Gattungen der Caprifoliaceen.'—(No. 19). N. Rusche, 'Ueber Kohlenbildung.'—(No. 20). F. v. Mueller, 'Note on Sir W. Macgregor's Botanical Collections.' —R. v. Wettstein, 'Ueber die Systematik der *Solanaceæ*.' —(No. 21). H. Solereder, 'Ueber die Verwandtschaftverhältnisse der Acanthaceen-Gattung *Somalia* Oliv.'

*Bot. Gazette* (April). — G. E. Stone, 'A simple self-registering auxanometer' (1 plate). — C. MacMillan, 'Classification of Metaphyta.' — B. D. Halsted, 'Fungi common to wild and cultivated plants.' — J. M. Holzinger, 'Identity of *Asclepias stenophylla* & *Acerates auriculata*.'—A. Commons, 'Bartram's Oak.'—E. E. Gayle, 'Spines of *Cenchrus tribuloides*.'

*Botanical Magazine* (May).— *Lilium Lowii* Baker, *Didymocarpus lacunosa* Hook. f., spp. nn.

*Botaniska Notiser* (häft. 3). — P. G. E. Theorin, 'Hymenomycetes Faluhenses.' — J. Hulting, 'Lichenes nonnulli Scandinaviæ.' —G. O. Malme, 'Lichenologiska Notiser.'—O. Westerlund, 'Några växtgeografiska uppgifter från Lule elfdal och angränasnde delar af Lule Lappmark.'—T. Hedlund, 'Några ord om substratets betydelse för lafvarne.'

*Bot. Zeitung* (Ap. 15). — G. Karsten, 'Zur Entwickelungsgeschichte einiger Gnetum-Arten.'—(Ap. 22–May 20). B. Stange, 'Beziehungen zwischen Substratconcentration, Turgor und Wachsthum bei einiger phanerogamen Pflanzen.'—(May 20). W. Rothert, 'Ueber *Sclerotium hydrophilum*, einen sporenlosen Pilz.'

*Bull. Soc. Bot. France* (xxxviii.: Session extraordinaire: May 1). — E. Malinvaud, 'Questions de Nomenclature.' — X. Gillot & H. Coste, '*Scleranthus* de la Flore Française.'

*Bulletin Torrey Bot. Club* (April). — A. M. Vail, N. American species of *Meibomia* (*Desmodium*).—F. L. Harvey, 'Freshwater Algæ of Maine' (1 plate).—W. Deane, 'Sereno Watson.'— T. C. Porter, 'Additions to Eastern Flora' (*Eupatorium Vaseyi*, *Solidago Roanensis*, *Tripsacum floridanum*, spp. nn.).—(May). B. D. Halsted, 'A Century of American Weeds.' — N. L. Britton, Rusby's S. American Plants (*Oyedæa boliviana*, *Viguiera lanceolata*, *Salmea mikanioides*, *Calea robusta*, spp. nn.). — G. B. Sudworth, 'The Name of the American Chestnut.'—F. L. Scribner, '*Stipa Richardsonii* Link & *S. Richardsonii* Gray' (1 plate).

*Gardeners' Chronicle* (Ap. 16). — *Moorea irrorata* (fig. 73). — (Ap. 23). *Vanda Arbuthnotiana* Kranzlin, *Cattleya Alexandræ* L. Lind. & Rolfe, *Cypripedium exul* O'Brien (fig. 77), spp. nn.—*Prunus Davidiana* (fig. 79).—(Ap. 30). *Kniphofia Nelsoni* Mast. (fig. 83), *Stapelia Woodii* N. E. Br., spp. nn.—(May 7). *Cattleya Victoria Regina* O'Brien (!), *Odontoglossum platycheilum* Weathers (fig. 84), spp. nn. — E. von Regel (portrait). — (May 14). *Coelogyne cuprea* Kranzlin, sp. n.— *Disa incarnata* (fig. 88).—F. v. Mueller, 'Fan-palms of Australia.'— (May 21). *Oncidium Gravesianum* Rolfe, sp. n. (fig. 94).

*Journal de Botanique* (Ap. 16 & May 16). — M. Micheli, 'Légumineuses de l'Ecuador et de la Nouvelle-Grenade.'— E. G. Camus, 'Monographie des Orchidées de France.'— (May 1). H. Hua, 'Le rhizome du *Paris quadrifolia*, est-il sympodique ou monopodique?' —(May 16). E. Bescherelle, 'Sur le genre *Eustichia*.'

*Journ. Linnean Soc.* (xxix., 199–200: Ap. 26). — W. West, 'Freshwater Algæ of West Ireland' (7 plates).

*Oesterr. Bot. Zeitschrift.* (May).—K. Fritsch, 'Nomenclatorische Bemerkungen.'—R. v. Wettstein, 'Die Arten der Gattung *Gentiana* aus der section *Endotricha*' (contd.).—H. Braun, '*Galium Mollugo*.' — J. Freyn, 'Plantæ novæ Orientales' (*Stentotænia macrocarpa*, *Torilis Sintenisii*, *Scabiosa rufescens*, *Gundelia tenuisecta*, *Cousinia interexta*, spp. nn.). — F. Arnold, 'Lichenologische Fragmente.'— H. Sabransky, 'Zur Brombeerenflora der Kleinen Karpathen.'

*Phycological Memoirs* (April).—M. O. Mitchell & F. G. Whitting, '*Splachnidium rugosum*' (3 plates).—G. Murray, 'A Fossil Alga from

the Oolite' (*Caulerpa Carruthersii*, sp. n.: 2 plates). — Id., 'Structure of *Dictyosphæria*' (1 plate). — E. S. Barton, 'Malformations of *Ascophyllum & Desmarestia*' (1 plate). — E. A. L. Batters, '*Conchocelis*, a new genus of perforating Algæ' (1 plate).

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## *BOOK-NOTES, NEWS, &c.*

Mr. E. M. Holmes has compiled for the Pharmaceutical Society a *Catalogue of the Hanbury Herbarium* (8vo, pp. 136, xiv.), which should do something to make this collection better known than it is at present. Both at the British Museum and Kew, pharmaceutical students are constantly making enquiries which could be more conveniently answered by reference to such a typical collection as this than by consulting a vast general herbarium; and to such students Mr. Holmes's *Catalogue* will be very useful. If, as we believe, it is not for sale, the Society will doubtless take the necessary steps to place it in the hands of those for whom it is specially intended. The *Catalogue* contains short descriptions of the individual specimens, which seem hardly needed, followed by the locality where each was collected, and often with useful notes appended by Mr. Hanbury, the compiler, and others. In some genera the collection is particularly rich—in *Amomum*, for example, the species described by Prof. D. Oliver and Mr. Hanbury in *Journ. Linn. Soc.* vii. are fully represented: the abbreviation "O. & H." attached to the names of these is equally applicable to the descriptions of *Compositæ* by Prof. Oliver and Mr. Hiern in the *Flora of Tropical Africa*, and is thus insufficient. The *Catalogue* is beautifully printed, and we are glad to see that both plants and persons are included in one index.

Mr. R. V. Sherring's visit to the island of Grenada, "under the direction of the Joint Committee of the Government Grant Committee of the Royal Society and of the British Association for the Advancement of Science," seems to have been singularly unproductive of novelties. Although "nearly 6000 specimens" were collected, the total number of species is only 145, and of these only one—*Acrostichum Sherringii*—is absolutely new, the other now described—*Alsophila Elliottii*—having been previously observed by Mr. W. R. Elliott. The species are enumerated by Mr. J. G. Baker in the *Annals of Botany* for April: most of them are "universally diffused throughout the West Indies."

Dr. Vasey sends us vol. i. of *Illustrations of North American Grasses* (Bulletin No. 12 of Botanical Division of the U. S. Department of Agriculture), containing plates and descriptions of fifty species of the grasses of the present region of Western Texas, New Mexico, Arizona, and Southern California. The region in question, "immediately adjoining the northern boundary of Mexico, including the western part of Texas, and the greater part of New Mexico, Arizona, and Southern California, is one of remarkable heat and aridity"; it consists of elevated plains, intersected by

mountain valleys, and drained by comparatively few streams, which, from want of rain, cease to flow during a good part of the year. The vegetation resembles that of the great plateau of North Mexico, of which the country is indeed a continuation, and the grasses are "largely the same or of the same genera," and, like the rest of the flora, as different from those of the Eastern States as that of the "northern portion of the Sahara." As one of the most important agricultural questions before the people of the country is how to increase the production of grass and forage on the arid soil, the *Illustrations* will be of great value in giving an acquaintance with the native grasses, some of which by cultivation may be sufficiently improved for this end. The descriptions are concise, and seem carefully drawn up; and the plates, which include dissections of the flower, are on the whole good, though occasionally somewhat sketchy.

"THE energy and curiosity of the British race is [*sic*] inextinguishable. It [which?] traverses and explores every part of the world, and pours into Kew a continuous stream of botanical information and specimens." This stream requires an outlet, and this is to be supplied by the *Kew Bulletin*, from which we extract the above sentences. Translated into prose, the sentences mean that "decades of plant-descriptions will from time to time be published in its pages." As the "primary function" of the *Bulletin* has been declared to be "economical, not scientific" (see p. 126), this further departure in the direction of science is noteworthy. The species described in the April number are *Clematis Prattii* Hemsl., *Gleditschia officinalis* Hemsl., *Ipomæa Lesteri* Baker, *Gærtnera morindoides* Baker, *Cyrtanthus Galpini* Baker, *Aloe Boylei* Baker, *Tripogon Lisboæ* Stapf, *T. Jacquemontii* Stapf, *Aristida reducta* Stapf, *Gymnogramme Baileyi* Baker. The threatened suppression of the *Bulletin* has been averted, Mr. Plunket, the First Commissioner, having stated in the House of Commons that it is "highly valued by many persons." On the same evening, Mr. Plunket said that the new edition of the *Guide to Kew Gardens* was "almost ready, and they hoped to have it out during the summer." Some mirth was naturally excited in the House when the First Commissioner was reminded that he gave "a precisely similar answer fourteen months ago." It is to be regretted that so useful an adjunct to the Gardens—of far more importance than the *Bulletin*—should have been allowed to remain out of print for four or five years, and we hope soon to announce that the new edition has made its appearance.

WE are pleased to find that the plea of convenience put forward by Mr. Hemsley on behalf of "the Kew botanists," on which we felt it our duty to comment on p. 53, does not receive the support of the Director. In the *Gardeners' Chronicle* for May 21st, Dr. Dyer says, "the ordinary Kew rule [is] that the name of that author is to be adopted who first places a given plant in its right genus." The "rule" has certainly not been by any means strictly observed at Kew in the past, and we are glad to learn that the line which we have consistently advocated meets with Dr. Dyer's approval.

We learn that *Grevillea* has become the property of Mr. E. A. L. Batters, who proposes to continue its quarterly publication. Mr. George Massee will edit the new series.

We regret to record the death of Edward von Regel, the learned and energetic Director of the Imperial Botanic Garden, St. Petersburg. He was born at Gotha, Aug. 13th, 1815, and died at St. Petersburg on April 27th.

The eleventh centuria of the Herbarium Austro-Africanum, issued by Prof. MacOwan and Mr. H. Bolus during the years 1885–92, has just been sent out. It and Cent. xii. have been delayed by Mr. Bolus's absence in Europe. Cent. xiii. was issued in advance of these two in 1891, and consists entirely of Griqualand East plants from Tyson. About a third of Cent. xi. consists of Natal plants, contributed by Mr. J. Medley Wood, Curator of Durban Bot. Garden; a third from the indefatigable Griqualand East collector, Tyson; the rest are of Mr. Bolus's collecting. This issue is made gratis to the ten principal European and American herbaria, as the most useful contribution which the Cape Government Herbarium can make to the common cause.

Mr. E. D. Marquand sends us what appears to be a very full and careful list of *The Flora of Guernsey*, reprinted from the Transactions of the Guernsey Society of Natural Science. In the present list, which may be regarded as a prelude to the complete Flora which Mr. Marquand has in hand, he enumerates 636 flowering plants, 18 ferns, and 9 fern-allies; of these about 130 are not recorded for Guernsey by Prof. Babington in his *Primitiæ Floræ Sarniceæ* (1839), while about 40 included in the *Primitiæ* have not been found by Mr. Marquand. Copies of the list may be had at the Guille-Allès Library, price 1*s*.

"Nature's greatest curiosity" is the heading of a hand-bill sent out from Northampton. It is accompanied by a highly idealised representation of *Trapa bispinosa*, which is thus described:—"This wonderful curiosity is known as the Chinese Lily Bulb, or Water Plant. It was first discovered growing in the great lake of Alak, in the north-western part of China. It is the only plant in the known world that will grow a long vine, and produce beautiful flowers out of a common glass or a jar of water. It is especially noted for its long and beautiful vine, and the great beauty and delightful fragrancy of its flowers. These great curiosities of nature were first introduced and sold in the American Exhibition, Philadelphia, and only of late a very small quantity being imported into this Country, which has made them very scarce and valuable. Place the Lily Bulbs in a jar of water, change water once or twice a week. They will float for several days, and gradually sink to the bottom. It takes twelve to fifteen days before they will commence to grow. If they should not commence to grow in fifteen days, cut off the crown of the Bulb carefully, so as not to injure the sprout." "Seven Plants sent Post Free for 15 stamps," is singularly cheap for a marvel of this kind.

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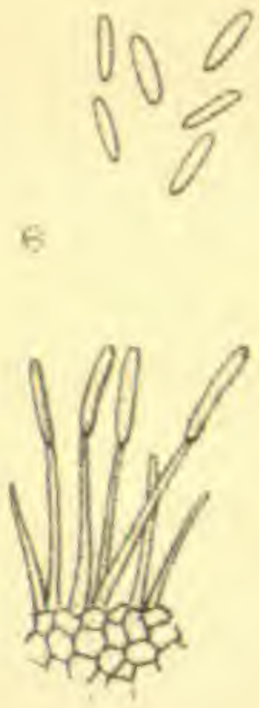
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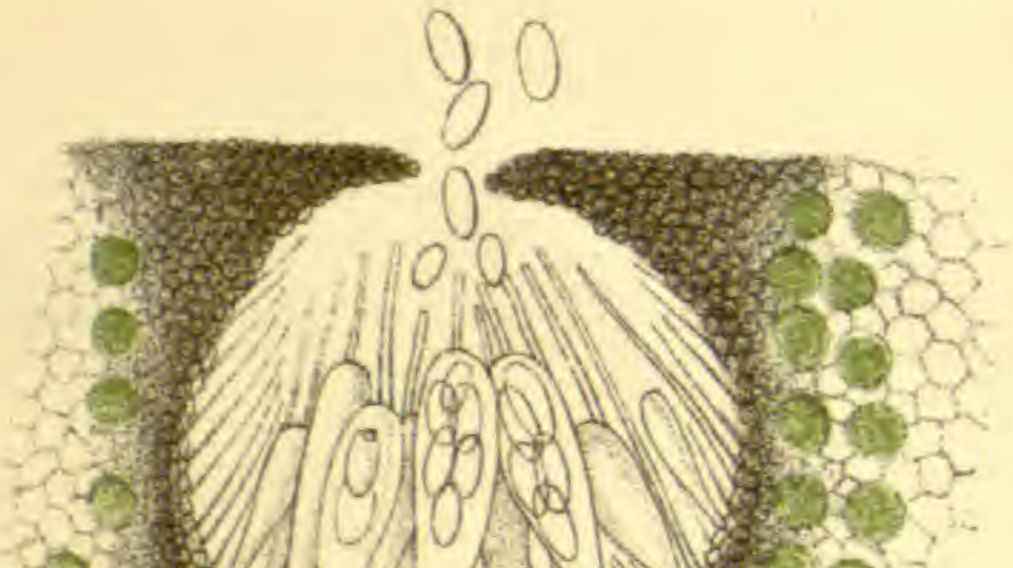
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British Marine Lichens

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Tab. 325.

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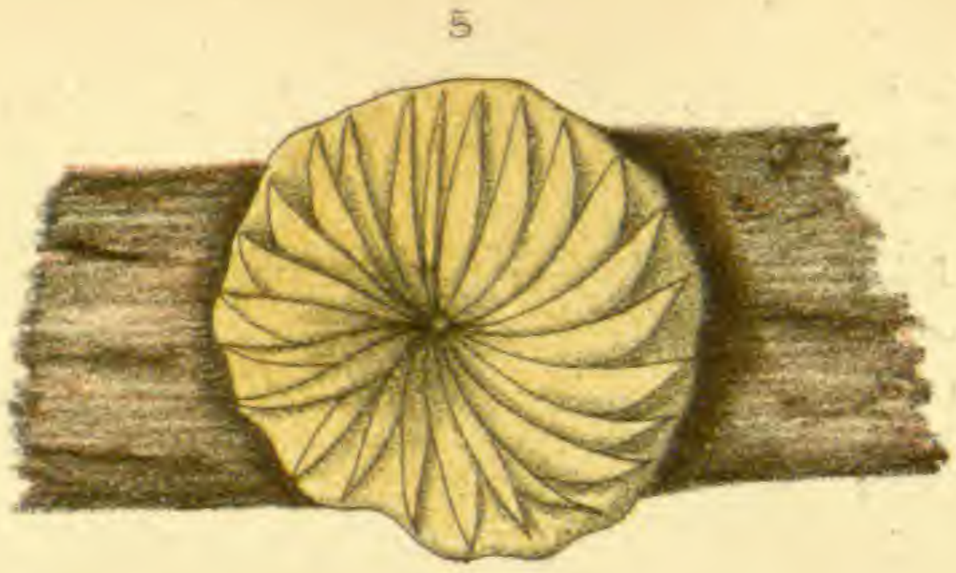

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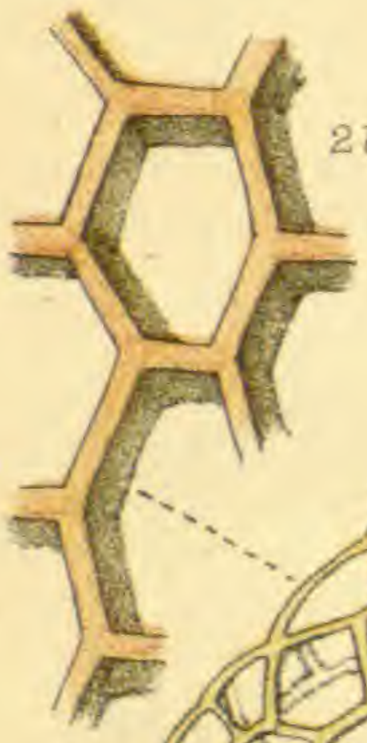

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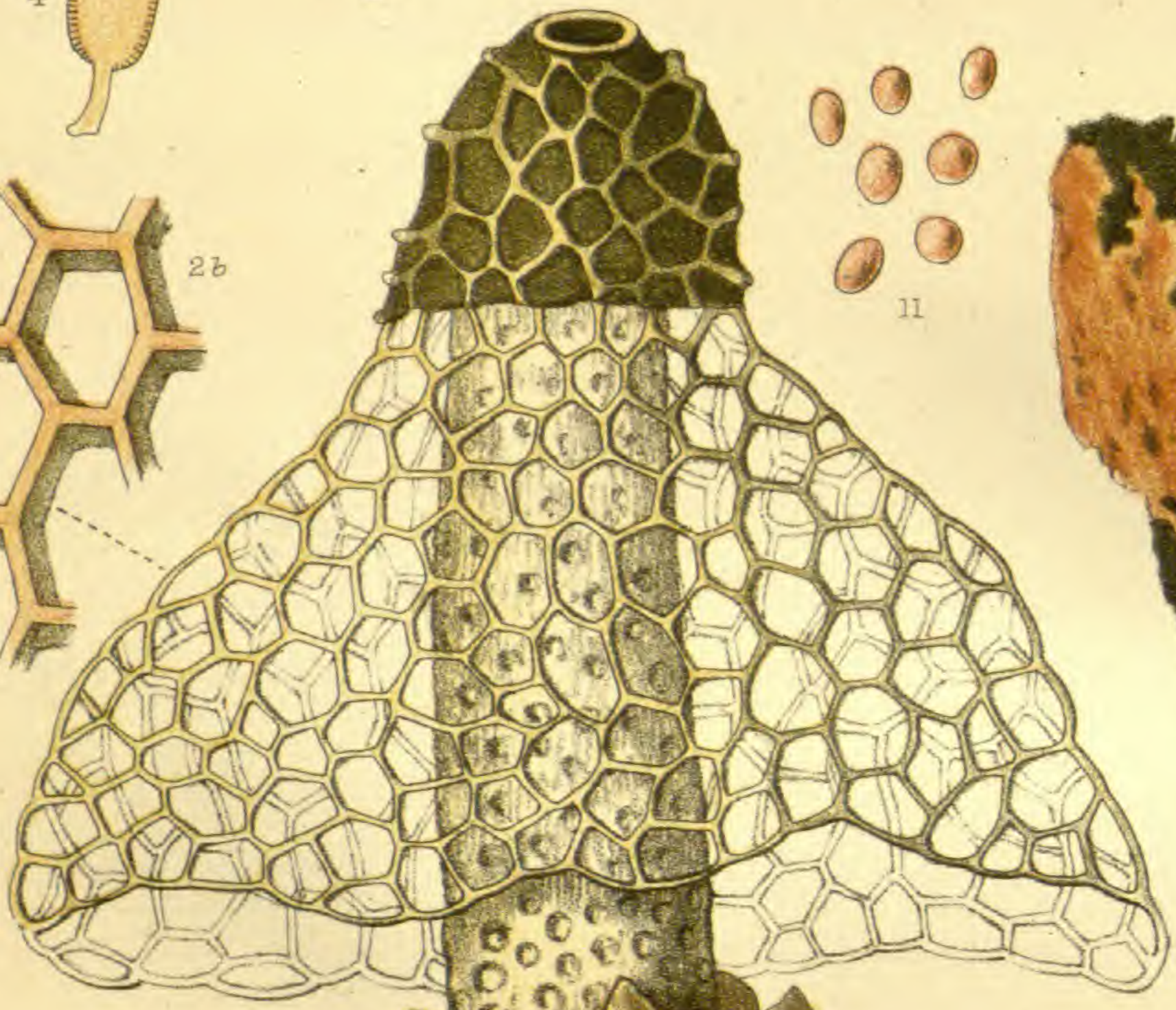

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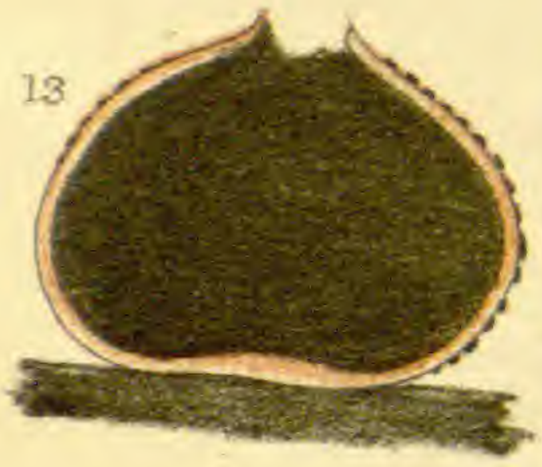

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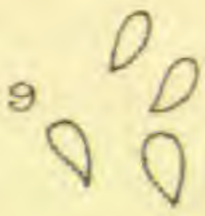

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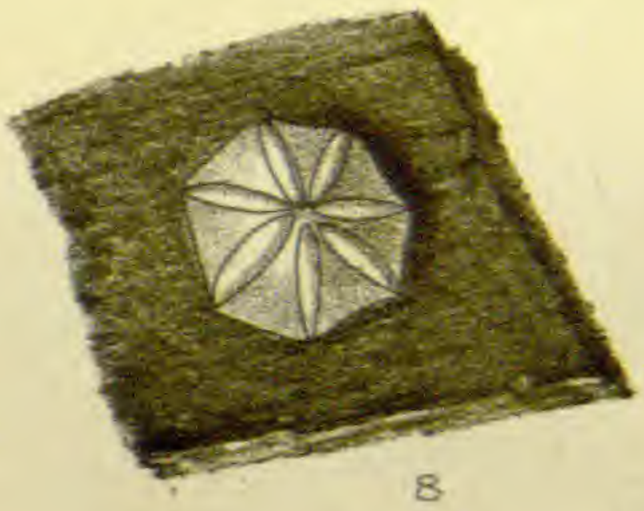

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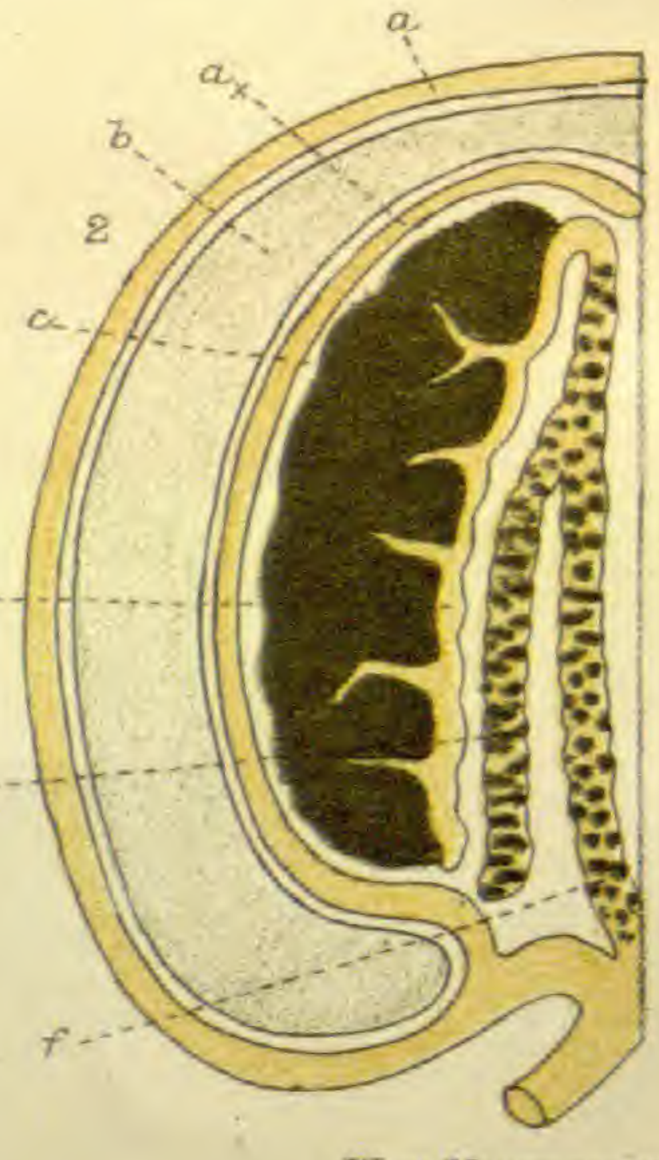

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G.Massee del.
R.Morgan lith.

West, Newman imp.

St. Vincent Fungi.

# A NEW MARINE LICHEN.

By George Massee.

(Plate 324.)

The following interesting addition to our Lichen-flora occurred amongst a small collection of marine Lichens, handed over to me for identification by Mr. E. A. L. Batters, by whom they were collected:—

**Verrucaria lætevirens**, sp. n. Thallus forming a broadly effused, rather thick, inseparable film, very smooth and even, not cracked, rather gelatinous, bright olive-green, the lobed margin paler and yellowish; gonidia protococcoid, globose, 12–15 $\mu$ diam.; perithecia minute, crowded, globose, entire, black, completely immersed in the thallus, ostiolum forming a very minute, slightly raised black ring; asci clavate, spores 8, inordinate, 1-celled, elliptical, colourless, 11–12 × 6 $\mu$; paraphyses scanty, slender, cylindrical; spermogonia immersed, mixed with the apothecia, sterigmata filiform, simple, aseptate, spermatia cylindrical, straight, 8–9 × 2 $\mu$.

Hab. On smooth rocks between tide-marks. Berwick-on-Tweed and Burnmouth, on the east coast; Loch Goil, Cumbrae, and Gare Loch, on the west.

There are at least sixteen British marine Lichens included under the somewhat heterogeneous collection called *Verrucaria*. The present species is distinguished amongst these by its broadly expanded, perfectly smooth, bright green thallus, presence of paraphyses, and form of sterigmata and spermatia. Its nearest ally is *V. microsporioides* Nyl.

Plate 324, fig. 1, portion of *Verrucaria lætevirens*, nat. size; fig. 2, section through thallus and apothecium, × 300; fig. 3, section through spermogonium, × 300; fig. 4, section of portion of thallus, × 400; fig. 5, isolated gonidia, × 400; fig. 6, sterigmata and spermatia, × 400; fig. 9, asci, paraphyses, and spores, × 400.

*V. marina* (Deak.) Leight. This rare species, first observed by Dr. Deakin on submerged maritime rocks at Meadfoot, near Torquay, was collected by Mr. Batters at Berwick-on-Tweed and Loch Goil. An examination of Deakin's type-specimen, now in the Leighton collection in Kew Herbarium, shows the spores to be elliptic-oblong, 3-septate at maturity, 9–10 × 3–4 $\mu$; paraphyses absent. Thallus smooth, not becoming cracked, very dark olive-green, margin blackish.

Plate 324, fig. 8, ascus and spores of *Verrucaria marina*, × 400.

*V. mucosa* Whlngb. This species closely resembles *V. lætevirens* when examined under a pocket-lens, but is usually darker in colour, and differs materially in the absence of paraphyses and smaller gonidia. Loch Goil.

*V. maura* Whlngb. The present species is not uncommon on rocks between tide-marks, and is readily known by the black thallus becoming minutely cracked in an areolate manner when dry, and

usually studded with small wart-like protuberances. Paraphyses none. The spores are elliptical, and, as in most lichens and fungi, variable in size, hence constituting a minor factor in the discrimination of species. The measurements of various authors are as follows:—(Nylander) 12–16 × 7–8 $\mu$; (Leighton) 13–15 × 7–8 $\mu$; (Hepp) 12–20 $\mu$ long, 2–3½ times as long as broad; (Th. Fries) 13–16 × 8–9 $\mu$, yellowish. Cumbrae, Little Cumbrae, and Loch Goil Head, on the west; Burnmouth and Eyemouth, on the east of Scotland.

Plate 324, fig. 7, ascus and spores of *Verrucaria maura*, × 400.

It is highly probable that careful search on our maritime rocks, even quite down to low-water mark, would add considerably to our marine Lichen-flora.

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## *NEOTINEA INTACTA* IN COUNTY CLARE.

By H. C. Levinge, M.A.

In the middle of May of this year I started on a short tour in the limestone district of Clare, comprising the northern portion of the county, adjoining the Bay of Galway, and known as the Burren district, the principal object I had in view being to ascertain how far that rare little orchid, *Neotinea intacta*, extended in that part of the country. On my way I stopped for one day at Castle Taylor, in the Co. Galway, where my friend Mr. A. G. More had formerly found the *Neotinea;* but I regret to say that, after many hours' diligent search in the locality indicated by him, I was unable to re-discover it. More success, however, attended my search in the neighbourhood of Ballyvaughan, where it was found to extend from about six miles west to about three miles east of that town. I also gathered it at Glanquin, where it was first observed by the late Mr. Corry. This is the wildest and most unfrequented part of Burren, about nine miles in a direct line from Ballyvaughan, and perhaps more than double that distance by road. The flowers of this plant have been described as of a delicate pink colour; but all that I observed were rather of a creamy white. This difference between the actual and the described colour of the flowers has probably led to doubts as to the true name of the plant, which had been previously gathered, but not identified, by Mr. P. B. O'Kelly and other botanists. In fact, it was not until I had referred specimens to Mr. More that I felt fully satisfied as to the identity of the Burren plant. It cannot be said that this little orchid—a most important item in the Irish Flora—is really plentiful; miles of country may be walked over without finding a single plant; but in certain localities it is not uncommon, and it was observed to grow on loamy pastures, in the grass on rocky plateaus, and in heathery and stony fields. Doubtless careful search would be rewarded by finding it in other parts of the limestone districts of Galway and Clare; but I had not time to spare for further investigation, and the weather during my visit was stormy and wet.

Abounding everywhere in this limestone district is the beautiful bright blue *Gentiana verna*, and nowhere have I seen it in such perfection and profusion as in one sandy field close to the sea-shore, about two miles N.E. of Ballyvaughan. There I was able to secure specimens bearing on the one root from ten to fifteen flowers, of the largest size and deepest blue. In the same field, last year, in the month of June, I found *Orobanche rubra* in tolerable abundance. *Sesleria cærulea* covers the rocky portions of the country, where tillage is an impossibility, and it is certainly one of the commonest of the truly wild grasses. I was fortunate enough to find at Castle Taylor a few plants of the variety *flavescens* of Moore, but did not observe it in Clare. In this variety the florets are pale yellow, and the foliage and stem of a lighter shade of green than that of the type, otherwise it does not appear to differ from it. Other plants which occur plentifully are *Geranium sanguineum* and *Dryas octopetala*, and its variety *pilosa;* the latter was observed at Castle Taylor especially, as mentioned by Mr. A. G. More in his paper on the Flora of Castle Taylor.* *Helianthemum canum* at Blackhead and near Poulsallagh. *Arenaria verna*, *Galium sylvestre*, *Saxifraga hypnoides* var. *gemmifera* Syme, and another variety of the same with leaves forming small rosettes; both of these Saxifrages were in full flower on the rocks near Blackhead. *Potentilla fruticosa* was found flowering sparingly near Ballyvaughan; and Mr. O'Kelly pointed out to me *Potamogeton lanceolatus*, which he had discovered last year in the Cahir River, south of Blackhead (vide *Journ. Bot.* 1891, p. 344). It grows in a rather strong current on a hard gravelly bottom; but, of course, was not in flower so early in the year. In a pasture near this river, far from any houses, and amidst a vast quantity of the common *Primula veris*, were several plants of the variety with orange-brown corolla; and among some rocks in the same neighbourhood I found *Anemone nemorosa* with bright rose-pink flowers, and stems tinged with the same colour. Another interesting species, sent to me last August by Mr. O'Kelly, is *Teucrium Scordium*, which occurs at the edge of a small lake near Glanquin, also *Rhamnus Frangula* growing prostrate on rocks in the same locality. I had a long, and, I am sorry to say, fruitless search for *Ajuga pyramidalis*, formerly discovered by Mr. F. J. Foot near Poulsallagh, and I observe from the last number of this Journal that Messrs. Nowers and Wells also failed to find it on the Islands of Aran; but I hear that Mr. N. Colgan has been more fortunate, and that he has this year discovered it on the Great Aran Island. *Adiantum Capillus-Veneris* occurs in the crevices of the rocks at Blackhead and elsewhere. *Asplenium Ceterach* var. *crenata* is not uncommon about Ballyvaughan. *Cystopteris fragilis* is plentiful everywhere, and many curious varieties of the common *Scolopendrium vulgare* are to be met with throughout this part of the country. It would be easy to add to the list of uncommon plants which are to be found in this most interesting district; but enough has been said, I think, to show that it is well worthy of a visit from botanists in search of rare plants.

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* *Proceedings of the Botanical Society of Edinburgh*, 1855, p. 26.

# SOME WEST INDIAN FUNGI.

By George Massee.

(Plate 325.)

(Continued from p. 164.)

All the species enumerated below were collected in St. Vincent :—

*Agaricus rhytopilus* Mont. Petit Bordel.

**Pleurotus inconspicuus,** sp. n. Pileo tenerrimo, pellucido, candido resupinato, suborbiculari, planiusculo, albo basi villoso adfixo; lamellis concurrentibus, distantibus, angustis, albis; sporis ellipsoideis, basi apiculatis, 6 × 3 $\mu$.

Hab. In ramentis siccis, Walliboo Valley.

Gregarious; pileus 1–2 mm. across, very thin and pellucid, entirely resupinate or partly reflexed. Allied to *P. perpusillus*, from which the present species differs in the smaller size of the entire fungus, and the narrow, distant gills.

Plate 325, fig. 8, an entire specimen, × 6; fig. 9, spores of same, × 400.

**Panus applanatus,** sp. n. Resupinatus, coriaceus, applanatus, orbicularis, sessili-adnatus, extus pallide ochraceus, tomentosus; lamellis latiusculis, concurrentibus, pallide ochraceis; sporæ ellipsoideæ, 6 × 3 $\mu$.

Hab. Ad truncos, Walliboo Valley.

Pileus 2–4 cm. diameter, very thin, coriaceous, as are also the thin, rather distant gills. Allied to *P. patellaris*, but differing in not being furfuraceous externally, and in the broader gills and smaller spores.

Plate 325, fig. 5, fungus, nat. size; fig. 6, section of same, nat. size; fig. 7, spores of same, × 400.

*Marasmius rigidus* Mont. Friendship.

*M. insititius* Fr. Walliboo Valley.

*Heliomyces decolorans* B. & C. Walliboo Valley.

*Crepidotus alveolus* Lasch. Walliboo Valley. The specimens are larger and have the margin more crisped and lobed than in the typical European form, but there does not appear to be any good specific, or even varietal, distinction.

*Psilocybe fortunata* Cke. Chateau Belair.

*Psathyrella modesta* B. Chateau Belair.

*Polyporus picipes* Fr. Walliboo Valley.

*P. zonalis* Berk. Walliboo Valley.

*P. varius* Fr. Petit Bordel.

*Fomes australis* Fr. var. *stipitata*. A very peculiar variety with the unmistakable hard cuticle and purple-brown substance occurred, having the pileus furnished with a lateral stem 4 in. long, $\frac{2}{3}$ in. thick, equal, rigid, erect. The entire fungus has exactly the habit of *Polyporus lucidus*. Friendship Valley.

*F. ulmarius* Fr. Friendship Valley.

*F. fomentarius* Fr. Friendship Valley.

*Poria anæctopora* B. & C. Walliboo Valley.
*Trametes hydnoides* Fr. Friendship Valley and Walliboo Valley.
*T. sulphuratus* Fr. Friendship Valley (1200 ft.).
*Favolus fimbriatus* Speg. Walliboo Valley. The present species is very closely allied to, if indeed distinct from, *F. brasiliensis* Fr.; the main distinction turns on the denticulate or fimbriate edge of the dissepiments in *F. fimbriatus*, but this character is present in varying degrees in both species.
*Hydnum pallidum* C. & E. Walliboo Valley.
*Thelephora Sallei* B. & C. Walliboo Valley.
*Stereum obliquum* Mont. & Berk. Walliboo Valley.
**Hypolyssus fœtidus**, sp. n. Gregarius, fœtidus, pallide ochraceus, 1·5–2 cm. alt., durus; pileo urniformi farcto, supra subdepresso, infra (lateraliter) tecto hymenio ochraceo, sicco contiguo, ruguloso; stipite tenui, æquali, glabro; sporis globosis, hyalinis, 3 $\mu$ diam.
Hab. Ad ligna emortua. Walliboo Valley.
Distinguished from *H. Montagnei* by the very fœtid odour, rugulose hymenium (when dry), but not cracked, and the smaller spores.
Plate 325, fig. 3, fungus, nat. size; fig. 4, vertical section of same, nat. size; fig. 5, spores, × 500.
**Bovista incarnata**, sp. n. Globoso-depressa; endoperidio papyraceo, levissimo glaberrimo, incarnato, vertice rumpente; exoperidio granuloso brunneo secedente; capillitio sporisque echinulatis ecaudatis obscure olivaceis, 4 $\mu$ diam.
Hab. Ad truncos emortuos; Walliboo Valley.
Gregarious, 2–3 cm. across; allied to *B. velutina* in habit, but distinguished by its larger size, deciduous exoperidium, and flesh- or copper-coloured endoperidium.
Plate 325, fig. 12, a single specimen, nat. size; fig. 13, section, nat. size; fig. 14, spores, × 400.
*Dictyophora phalloidea* Desvaux, var. *campanulata* Ed. Fischer, Denksch. der schweizer. natur. Gesell. Band 32, i. p. 82 (1890). *D. campanulata* Ed. Fischer, Ann. Jard. Bot. Buiten. vol. vi. p. 23; Sacc. Syll. vol. vii. pt. i. No. 1.
Hab. Ad terram; Friendship Valley.
Very fœtid at maturity.
Plate 325, fig. 1, fungus, nat. size; fig. 2, section through a specimen before the volva is ruptured; *a*, outer layer of volva; *a* ×, inner layer of volva; *b*, gelatinous median layer of the volva; *c*, semiliquid mass arising from the deliquescence and disintegration of the hymenial elements,—basidia and paraphyses,—and containing the spores in suspension. The very offensive smell is produced by this mass; *d*, tramal plates of the hymenium; *e*, the curtain or veil before its expansion to form the pendulous network; the present structure originates from the upper portion of the stem within the pileus; *f*, the hollow stem, × 2; fig. 2a, a basidium bearing eight sessile spores, also free spores, × 1000; fig. 2b, portion of network of veil, × 5.
*Sphærostilbe cinnabarina* Tul, Friendship Valley.
*Hypoxylon discolor* B. & Br. Walliboo Valley. It is very interesting to note that the present well-marked species, hitherto known only from Ceylon, should occur in the West Indies.

*Xylaria anisopleura* Mont. Friendship Valley.
*Diatrypella verruciformis* Nits. Walliboo Valley.

**Chromosporium lætum**, sp. n. Effusum, pulverulentum, læte lateritio-aureum; conidiis obovatis globosisque, levibus, pallide carneis 8–11 $\mu$ diam., stratum pallidius insidentibus ex hyphis brevis, hyalinis orinudis.

Hab. In ramis emortuis arborum.

Forming pulverulent patches 2–4 in. long. Allied to *C. vitellinum* Sacc. & Ellis, which is, however, distinguished by its golden-yellow colour.

Plate 325, fig. 10, portion of fungus, nat. size; fig. 11, conidia, × 400.

*Stemonitis dictyospora* Rost. Friendship Valley.
*Tubulina stipitata* Rost. Walliboo Valley.

(To be continued.)

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# NOTES ON WEXFORD PLANTS.

By G. E. H. Barrett-Hamilton and C. B. Moffat.

The following list of new localities for Co. Wexford plants is supplementary to the lists already published in this Journal by Miss L. S. Glascott and ourselves (*Journ. Bot.* 1889, pp. 4, 105; 1890, p. 87). Five plants noticed here are new to District 4 of Messrs. Moore and More's *Cybele Hibernica*, viz., *Aquilegia vulgaris*, *Ranunculus penicillatus*, *Stachys Betonica*, *Utricularia minor*, and *Hymenophyllum tunbrigense*. The signs prefixed to the names are those used in the *Cybele Hibernica*. To our friend Mr. A. G. More we owe our best thanks for the benefit of his advice and assistance at all times, and for his kind assistance in naming the rarer species; and we also have to thank Miss L. S. Glascott for the observations which she has allowed us to embody in this paper.

*Ranunculus Lingua* L. By the Owenduff River, near Mullinderry Mill. — *R. parviflorus* L. (1) Near "Porter's Gate," on the road from Fethard to the Hook. (2) In a small garden near the entrance to Dunbrody Park Avenue, in the village of Arthurstown. (3) A single plant in garden at Kiltrea.— *R. penicillatus* Dumortier. In the Boro River.

†*Aquilegia vulgaris* L. (1) Apparently native on the Owenduff River (north bank), about half-way between Mullinderry and Ballygarvan Bridges. A plant in bloom had white flowers. (2) A solitary plant by a shady road, near Arnestown, New Ross.

*Cochlearia danica* L. Plentiful on the cliffs at Carnivan; near Rosslare Fort; on the Burrow at Lady's Island; and on rocks at Duncannon Fort.

*Lepidium Smithii* Hook. Ballycullane; Baldwinstown; Lady's Island; Lindseystown; frequent in the Barony of Forth, and in most parts of the county which have been examined.

†*Senebiera Coronopus* Poir. About Enniscorthy. — ‡*S. didyma* Pers. Fisherstown.

*Viola sylvatica* var. *Reichenbachiana* Bor. In a boggy part of Nuke Wood, near Ballyhack. — *V. canina* L. (Fries). Plentiful among sandhills and fields at Rosslare.

*Lychnis vespertina* Sibth. Fethard, Carne, and Duncannon.

*Malva moschata* L. Of frequent occurrence in many parts of the county.

*Geranium columbinum* L. Two small roadside patches near Fisherstown Village.

*Erodium maritimum* Sm. Large Keeragh Island.

**Melilotus officinalis* Willd. Kiltrea and Aughnaclappa; on cultivated ground and in clover; not established.

†*Trifolium filiforme* L. Plentiful on the lawn at Kilmanock, where it grows with *T. procumbens* and *Medicago lupulina*, and was probably introduced when the lawn was laid down, about fifteen years ago.

*Vicia hirsuta* Koch. Of occasional occurrence in corn and other crops in both north and south of the county.

‡*Pastinaca sativa* L. Plentiful, with *Salvia Verbenaca*, near Rosslare Coastguard Station, and (also in company with *Salvia*) near Duncannon Sands, as already recorded by Mr. H. C. Hart, Oct. 1883. Also on fences near All Saints' Rectory, Duncannon.

[*Centranthus ruber* DC. On Tintern Abbey, and on walls and houses near New Ross.]

*Dipsacus sylvestris* L. Fisherstown, plentiful; Oaklands.

*Erigeron acris* L. Killanne, near Blackstairs Mountains (*Miss V. Cooper*).

**Tanacetum vulgare* L. At Killinick and Duncormick.

*Gnaphalium sylvaticum* L. At Woodbrook, in considerable quantity (*Miss V. Cooper*), and sparingly in a few other spots.

*Carlina vulgaris* L. Baginbun Head.

**Silybum Marianum* Gaertn. In waste ground near Chapel Railway Station.

†*Apargia hispida* Willd. Aughnaclappa Hill; in a strip of enclosed wood. We have not seen it as an undoubted native in any part of the county.

*Cynoglossum officinale* L. Sandhills at Rosslare House.

*Lycopsis arvensis* L. Abundant on many parts of the coast of the Barony of Forth, as at Rosslare and Kilmore.

*Myosotis collina* Hoffm. Sandhills at Rosslare.

[*Borago officinalis* has several times occurred about the same spot in fields near Clonroche.]

†*Hyoscyamus niger* L. Near Killanne (*Miss V. Cooper*).

[*Lycium barbarum* L. By a roadside at Fethard, near cottages. Certainly introduced.]

*Linaria vulgaris* Mill. A single plant on the roadside near New Ross; though frequent in north-west of the county, is uncommon on the south coast.

*Veronica montana* L. By the roadside at Mount Garrett Hill, near New Ross.

*Stachys Betonica* Benth. Sparsely here and there through a wood at Rosdisit, where it appears to be native. At Curraghmore Cross Roads, on the Arthurstown and Wexford Road.

*Lamium amplexicaule* L. Cornfields at Baginbun Head.
*Utricularia minor* L. Ballykelly Bog (*Miss L. S. Glascott*).
*Anagallis arvensis* L. var. *carnea*. Ballyhyland.
*Anacharis Alsinastrum* Bab. Plentiful in the pond at Castleboro.
*Orchis pyramidalis* L. On sandy banks at Duncannon.
*Ophrys apifera* Huds. At Kilmanock; All Saints' Rectory, Duncannon; on a railway-bank near Rosslare; and at Ballindoney (*Mr. T. Budgen*).

*Potamogeton pusillus* L. In drains at Dunmaine Bog (*Miss L. S. Glascott*).

*Carex pendula* Huds. Rosemount, near New Ross.— *C. riparia* Curt. On the Slaney, at Bellevue.

*Sclerochloa loliacea* Woods. At Rosslare.

*Bromus sterilis* L. At Lady's Island, and by the roadside at Rosslare House.— **B. erectus* Huds. A single plant gathered near Clonroche.

*Hymenophyllum tunbrigense* Sm. Mr. C. H. Peacocke informs us that this plant used to grow in two localities near Wexford. One of these has been destroyed by pic-nic parties, but the other, a good patch, still survives, and Mr. T. L. Thompson has kindly sent us a specimen.

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# AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 145.)

24. R. erythrinus Genev. *Journ. Bot.* 1890, pp. 204–206.—St. high-arching, angular, nearly glabrous, dark purplish red. Prickles strong, slightly declining from oblong compressed base, purplish red, with yellow tip. *L. 5-nate-pedate and 3-nate. Lts. somewhat convex*, bright green and nearly glabrous above, softly hairy or occasionally felted beneath, becoming purplish and nearly bare on both sides, irregularly *dentate-serrate, and much less wavy at the edge* than in *R. Lindleianus; term. long-stalked, obovate, cuspidate-acuminate*, or occasionally nearly elliptic-acuminate, subcordate. *Pan. sub-pyramidal, abruptly rounded at the top* (not truncate), with short few-flowered subpatent ultra-axillary branches, and several long rather distant ascending axillary ones; *rachis with a close coat of short hairs*, and sometimes felted towards the top, with rather few strong declining prickles, and very rarely a stalked gland or two. Sep. ovate, with short linear point. *Pet. large, oval, pink. Fr. large* and abundant.

Perhaps nearest to *R. Lindleianus* on the whole, though in some respects more strongly recalling *R. rhamnifolius*, as, e. g., in the *colour* of st. and l., and in the lax and subpyramidal pan. Widely distributed; especially abundant in Dev. and Cornw. Hedges and thickets.

b. *R. argenteus* (W. & N.). — Lts. broader, more rounded in outline, and more constantly felted beneath; term. broadly elliptic,

or even suborbicular. Pan. laxer and more leafy above, with a good many stalked glands, and usually shorter axillary branches. Whole plant paler in tint. Somerset.

25. R. ARGENTATUS P. J. Muell. *R. Winteri* Focke, Syn. R. G. pp. 196, 197. *St.* high-arching, *subpruinose*, dull red, hairy, angular. Prickles mostly long, but unequal and scattered, from much dilated and compressed base, nearly straight or declining, rarely falcate. *L.* 5-nate-digitate or *frequently pedate. Lts. subcoriaceous*, wavy at the edge, irregularly mucronate-serrate, slightly hairy, but *of a lustrous green above, greenish-white-felted with shining hairs beneath* (or pale green and nearly naked in shade); term. rather long-stalked, broadly elliptic, ovate or subrotund, with long acuminate or cuspidate point, and rounded base. *Pan. lax, leafy*, with rather long subpatent branches below, and the ultra-axillary part narrowing considerably, with 1-flowered or cymose-few-flowered branches; *rachis and ped. thickly clothed with long villous hairs, and many slender declining and slightly falcate prickles as unequal as those of the st. Fl. very showy, long-peduncled.* Sep. ashy-felted and hairy, often leaf-pointed. Pet. suborbicular, very shortly clawed, bright pink or white. Stam. pink, long. Flowers late.

A handsome, distinct-looking plant, as it occurs abundantly in the Ross (Heref.) neighbourhood. Reported also from some other counties. Woods and hedges.

26. R. RAMOSUS Blox. *Journ. Bot.* 1871, pp. 330–332; 1886, p. 219. — St. erect-arcuate, sulcate, nearly or quite glabrous. *Prickles* declining or subpatent, from a long compressed base, *usually very few. L. 5-nate-pedate* and 3-nate. *Lts. convex, coriaceous*, shining and subglabrous above, only moderately hairy beneath, but *frequently with close whitish felt under the hairs* (much like that on *R. rusticanus* leaves), *coarsely serrate and lobate-serrate;* term. obovate-cuspidate, subcordate. *Pan. rounded at the top, with long lower ascending racemose-corymbose branches; the somewhat flexuose rachis and the ped. ashy-felted* and thinly hairy; the prickles unequal, declining, or occasionally falcate, sometimes strong, but oftener weak, and few in number above. Sep. ovate, with linear points. Pet. broadly ovate, with very short claw, white or pinkish. Filaments white. Styles pinkish. Fr. indifferent, and often imperfectly produced. Wood-borders and rocky thickets.

The foregoing is a description of the Dev. and Cornw. plant. The *usual ramosus* of the Midlands differs from it considerably in having st. and pan.-rachis much more hairy and prickly; l. flat or concave and thinner, not so shining above or white-felted beneath; term. lt. much more rounded in outline, ovate or even broadly elliptic, and gradually acuminate; and pan.-rachis seldom conspicuously felted, and with its lts. much more attenuate to their base; also in its longer pet. narrowing gradually to their base. But there are forms in different parts of Egg Buckland parish, Dev., and at the Hartshill Quarries, Warw., which go far to bridge over these differences, and to justify Mr. Briggs's opinion (v. *Journ. Bot.* 1882, p. 102) that, "after all, the *ramosus* of Dev. and Cornw. may be essentially one with that of Warw." I may add that Mr.

Briggs thought that one of his Dev. "*ramosus*" forms might prove to be *R. macrostemon* Focke.

27. R. DURESCENS W. R. Linton, *Journ. Bot.* 1892, pp. 70, 71.—St. arcuate, angular, sometimes slightly sulcate, nearly glabrous, subpruinose and shining. Prickles many, rather unequal, declining from dilated and compressed base. *L. exceptionally small, 5-nate-pedate, coriaceous and subpersistent. Lts.* rugose and plicate, glabrous and dull brownish green above, *hard and dull yellowish green beneath, with* a few short stiff hairs, and *very prominent nerves terminating in mucronate teeth* (some of which are recurved); *often imbricate;* term. ovate, acute, or somewhat acuminate, with cordate base, and stalk armed with many falcate prickles, which often extend some way up the midrib. *Pan. broadly cylindrical above, with patent and divaricate interlacing cymose branches*, and subsessile term. fl., and below a few distant patent or subpatent corymbose axillary branches; rachis somewhat flexuose, with a good many very unequal hairs and some felt above, and a few slender unequal strongly declining prickles. Sep. ovate, with linear points. Pet. obovate, cuneate-based, light pink. Stam. pink, longer than the green styles. Derbyshire.

A well-marked plant, from the exceptionally broad pan., and the small, harsh, yellowish leaves.

28. R. LATIFOLIUS Bab. *Journ. Bot.* 1886, p. 219; 1887, p. 328. —*St.* arcuate-prostrate, angular, *sulcate*, nearly glabrous. Prickles small, slender, compressed, slightly declining from a very long compressed base. L. 5-nate. *Lts. very broad and large*, thin, hairy on both sides, coarsely and doubly dentate, and almost lobate, the teeth being acute, and all slightly directed forwards; *term. cordate-acuminate; bas. sessile, imbricate.* Pan. short, leafy below, with ascending few-flowered corymbose branches, its top and ped. felted and hairy, with a few subsessile glands, and short, slender, declining, yellow prickles. Sep. ovate-acuminate, greenish-felted. Pet. shortly ovate, clawed, white. Stam. white, exceeding styles. Open woods (E. Scotl.).

We still seem much in the dark about this plant. Prof. Babington's own specimen ("Cramond Bridge, near Edinburgh, July 30, 1850") in the Borrer Herb., Kew, looks to me very corylifolian.

Group 3. DISCOLORES. — *St. bearing* equal strong prickles and *adpressed hairs.* L. 5-nate, white-felted beneath. No stalked glands. In our plants the sep. are grey and reflexed in fr., and the stam. are longer than the styles.

29. R. RUSTICANUS Merc. *R. discolor* Bab. prius. — *St. arcuate-prostrate*, strong, angular and furrowed, *stellately downy and pruinose. Prickles* strongly declining *from a very large* dilated compressed *base.* L. 5-nate-pedate and 3-nate, or 5-nate-digitate, rather small, sub-persistent. *Lts. obovate-cuspidate*, coriaceous, convex, rugose above, *with very fine, close, white felt beneath. Pan.* long, narrow, felted, *with prominent angles, and large-based strongly hooked prickles;* the few lower branches axillary. *Sep. finely white-felted.* Pet. usually bright pink, or even purplish red, as are the styles, and sometimes the

stam. Fr. small and acid. Rarely a white-flowered form is found, and a "white" fruited one.

Usually recognisable at a glance by the large-based hooked prickles of the pan., and the shining white-felted under surface of the small obovate-cuspidate lts.

b. *R. elongatus* (Merc.).—Prof. Babington has suggested this name for a bramble which Mr. Briggs brought me from Freshwater (I. of Wight) in 1886, differing from typical *rusticanus* in the lts., which are distinctly acuminate, and much narrowed to the entire base. I have seen somewhat similar plants from other localities.

c. *R. pubigerus* Bab.—"St. angular, stellately hairy with spreading hairs, prickles slender from a dilated oblong depressed scarcely compressed base, patent or deflexed."—Bab. *Man.* ed. 8, p. 110. I have seen no authentic specimen; but the description would fit what I have commonly regarded as a hybrid between *rusticanus* and *leucostachys*. That *R. rusticanus* does hybridise in nature somewhat freely there can, I believe, be no doubt; and especially, though not exclusively, with *leucostachys*, *corylifolius*, and *cæsius*. This may also be the origin of *R. macroacanthus* Blox.

Hedges and thickets, generally distributed. Common as this bramble is in most parts of England, it is more sensitive to frost than some others, and so does not make its way so high up on the hills.

30. R. PUBESCENS Weihe? *R. thyrsoideus* Bab. prius. — *St.* strong and *rather high-arching at first*, angular and somewhat sulcate, usually with a rather thick coat of stellate hairs, sometimes subglabrous. Prickles few, rather short, declining from a much dilated compressed base. *L. large*, *5-nate-digitate*. *Lts. flat*, coriaceous, subglabrous and shining above, *softly hairy and greenish-white-felted beneath*, *strongly acuminate*, obovate or oval, with coarse, irregular, but usually rather shallow teeth; term. subcordate. Pan. narrow, rather long and lax, the branches few-flowered (usually only 1–3 fl.) and very short, the upper patent, the lower (which are very distant) subpatent; with 3-nate and simple leaves like the 5-nate stem ones in shape, colour, and texture, and rather few declining or deflexed prickles. Cal. hairy and felted like the under surface of the l. Pet. rather large, white.

Dr. Focke still hesitates, as he did in 1890 (v. *Journ. Bot.* for that year, p. 135), to reckon *R. pubescens* among British Rubi. But the bramble I have here described is certainly very widely distributed in England, is even locally abundant, and does not appear to me so very variable as Dr. Focke evidently considers it. The features in which it usually differs most from the German plant are apparently its weaker prickles and somewhat narrower lts. *R. thyrsoideus* Wimm. seems even more doubtfully British, and so for the present at all events is best omitted from our list. Of the Tamerton Foliot (Devon) plant, which Dr. Focke himself was disposed to accept in 1872, Mr. Briggs wrote to me only a few weeks before his death (with specimens from that locality), "I think the plant said to be the TRUE *thyrsoideus* that I got some years ago was only a form of

this white-petalled *rusticanus!*" I should add, however, that it seems to want the characteristic prickles of *rusticanus*, while the stem is subglabrous and deeply furrowed like that of the true *thyrsoideus*.

Group 4. SILVATICI. — St. arcuate-prostrate, bearing equal or nearly equal prickles of moderate size, and a good many patent hairs (especially when young). Some stalked glands and a few acicles not unfrequently present on pan. and (more rarely) on st. L. apparently never 7-nate, nor sep. conspicuously white-margined. Otherwise like Group 2 (RHAMNIFOLII), from which the plants of this group are often with difficulty distinguished, especially in the late summer and early autumn, when the greater hairiness of the st. is hardly, if at all, apparent. In our plants the sep. are reflexed in fr. (except in *myricæ*, *Salteri*, and *Sprengelii*), and the stam. are longer than the styles (except in *myricæ* and *Sprengelii*, and barely in *leucostachys* and *gymnostachys*).

A. Like the RHAMNIFOLII in having comparatively few hairs on st., and in being (typically) without stalked glands and acicles:—(31) *silvaticus;* (32) *macrophyllus* (usually) and vars., except *macrophylloides;* (33) typical *myricæ* and var. *virescens* (though in a Monm. form both are very glandular); and (34) *Salteri*.

B. St. usually conspicuously hairy, and sometimes having a few stalked glands. Pan. usually somewhat glandular and aciculate:—(35) *Colemanni* (hairs very short); (36) *micans;* (37) *Questierii;* (38) *Sprengelii;* (39) *pyramidalis* and var.; (40) *podophyllus* (hairs few); (41) *leucostachys* and vars.; and (42) *gymnostachys*.

31. R. SILVATICUS W. & N. — St. arcuate-prostrate, ultimately nearly glabrous, and with polished flat surfaces or shallow furrows between the angles, roundish below. *Prickles* crowded in the lower part of st., and there small, straight, and subulate; higher up still *short, but strong*, declining from long compressed base. L. rather large, all 5-nate-digitate. *Lts.. dentate-serrate towards their tip, coarsely simply serrate below, and wavy at the edge*, somewhat yellowish green on both sides, thinly hairy above, more thickly and often softly hairy beneath; term. long-stalked, elliptic-acuminate, with entire or occasionally subcordate base. *Pan. remarkable for its few small subsetaceous declining prickles, and rachis thickly clothed with short woolly hairs*, narrowly cylindrical, with many short patent or subpatent branches above, and many 3-nate, trifid, and simple l. remarkably acuminate and coarsely cut; the lower axillary branches racemose-corymbose. Sep. clothed like the pan.-rachis, and felted, ovate-cuspidate, loosely reflexed in fr. Pet. large, broadly obovate, emarginate, with short claw, pure white. Open wood-borders and hedges. Widely distributed in the south.

Often very like narrow-panicled specimens of *R. Lindleianus;* but distinguishable from it by its lower habit, its somewhat yellowish green and usually broader foliage, its hairier stem (when young), and smaller prickles, and above all by its much less strongly armed panicle.

32. R. MACROPHYLLUS W. & N. — St. arcuate-prostrate, usually long and stout, bluntly angular, moderately hairy. *Prickles rather few and small, from a large compressed base*, falcate or declining. *L. usually large, sometimes very large*, 5-nate-digitate and pedate. *Lts. mostly rather narrow*, green and subglabrous above, paler and soft with many short hairs or (when young) grey-felted beneath, with simple distant teeth towards their base, but often compound ones in their upper half and the more prominent frequently recurved; *term. lt. long-stalked, cordate-ovate or obovate, with long acuminate point.* *Pan.* compound, lax, leafy below, sometimes very long, with erect-patent branches and only moderate-sized fl.; its *prickles small*, falcate; its rachis and ped. grey-felted and hairy, and sometimes having a few sessile and very shortly-stalked glands. *Sep.* triangular-ovate-acuminate, grey-felted, *conspicuously reflexed in fl. and fr.*, often leaf-pointed. Pet. obovate, narrowing considerably to their base, white or pinkish. Fil. white, exceeding green styles. Woods and thickets; widely distributed.

Variable, but usually well marked by its small prickles, and large somewhat greyish lts. and pan.

b. *R. Schlectendalii* (Weihe). — L. thinner, softly hairy (not felted, or only with very close felt) beneath; *term. lt. obovate-cuneate-cuspidate. Pan much broader and shorter, and fl. larger.* Rare, I think, in the extreme south.

c. *R. macrophylloides* (Genev.). — Like var. b., but with *unequal prickles and a few acicles on the st., more coarsely-toothed l.*, and *pan. considerably glandular.* Pet. pink. Wooded hill-side above Tintern, Monm.

d. *R. amplificatus* (Lees). — Lts. softly hairy only on the veins beneath, as a rule conspicuously narrowed to their base, with large irregular dentate-serrate teeth, and prickly petiolules and midribs; term. obovate-acuminate, subcordate. *Pan. somewhat pyramidal, the lower axillary branches often very long, the upper short racemose-corymbose exceeded by the narrow simple floral leaves; rachis nearly covered with the long bases of the strong prickles.* Pet. white or pinkish. Hedges (Midlands and Monm.).

e. *R. glabratus* Bab. *Lts. shining above, only thinly hairy on veins beneath*, and so rather harsh to the touch; *term. subrotund-cordate cuspidate. Pan.* with *prickles very slender* and branches nearly equal, erect or strongly ascending, racemose, *with long-peduncled fl.* A well-marked plant, as shown me by the Rev. A. Ley in Heref., and as found by Rev. E. F. Linton near Christchurch, Hants.

f. *R. Devoniensis* (Focke MS.). — *Prickles more unequal* (though mostly small), and *passing into strong acicles.* Lts. obovate, cuspidate-acuminate. *Pan.-branches fascicled, mostly 1-flowered, very unequal, with some shortly-stalked glands, aciculate, strongly ascending.* Sep. cuspidate-acuminate. Found by Mr. Briggs near Plympton and on border of Dartmoor, S. Devon. I alone am responsible for placing this plant (of which I have a good series in fl. and fr.) under *R. macrophyllus.*

(To be continued.)

# FURTHER NOTES ON HIERACIA NEW TO BRITAIN.

By Frederick J. Hanbury, F.L.S.

(Continued from p. 170.)

**Hieracium lima,** n. sp.—My attention was first drawn to the Cheddar form of this singularly robust and striking species when looking through some of the older British herbaria. On visiting Settle in July, 1888, a very similar plant was found sparingly on the Giggleswick Scars. Though surrounded by *H. Gibsoni*, *H. cæsium* var. *Smithii*, *H. vulgatum* in various forms, *H. diaphanoides*, and *H. anglicum*, to which latter it appeared to be most nearly allied, it was manifest that it could not be placed to any of these species. Though bearing a general resemblance to *H. anglicum* as regards size, robust habit and arcuation of the peduncles, &c., it differs conspicuously from that species in having pure yellow styles, a very grey densely hairy involucre, and leaves felted on both surfaces with stiff curved white hairs. Very frequently there is an entire absence of cauline leaves, excepting a mere bract where the stem branches. Last year I had the opportunity of observing the plant in great quantity both at Cheddar and Settle, and the form from the latter place in cultivation in the garden, where it bears no likeness whatever to *H. anglicum*. Although I have thought it best to unite the Cheddar and Settle forms under one specific name, there nevertheless exists such important distinctions between the two that I feel it necessary to give a varietal name to the Yorkshire plant. In *H. lima* (Cheddar) the radical leaves are ovate and nearly entire, or coarsely toothed near the base, and abruptly narrowed into long shaggy petioles. The heads are rather more numerous and less robust, whilst the phyllaries are less shaggy than in the Settle form.

H. lima var. Brigantum, n. var.—Occurs on most of the limestone scars about Settle. The leaves are dark green, more pointed and gradually narrowed into short petioles than in the type, whilst the surface-hairs are of a less rigid nature. The heads are fewer in number, more robust and softly shaggy with grey hairs, and singularly globose and truncate at the base.

The excellent drawings made by Miss Lister of both forms will, when published, convey at a glance a better idea of these important characters than the brief description that can be given in a paper like this. Good series of the Cheddar plant have been dried by the Rev. E. F. Linton and Mr. W. F. Miller, and of the Settle plant by Miss Thompson. Of specimens sent to Scandinavia, Mr. Lindeberg writes, "Forma nova, mihi plane ignota, crassitudine caulis, magnitudine capitulorum, pilositate ligularum dentium, etc. insignis."

**H. euprepes,** n. sp. — A sheet of this plant in the Cambridge Herbarium, gathered by Prof. Babington on Snowdon, in August, 1847, first arrested my attention. In July, 1888, whilst collecting with Dr. F. Buchanan White along the banks of the Almond, in Perthshire, we met with this species in the fresh state. The plant occurred in considerable quantity, and a fine series was secured for

drying, and I have had it in constant cultivation since. During the same month Dr. White found it at Loch Voil, whilst Mr. Marshall collected it a few days earlier on the Glen Etive side of Clach Leathad, Argyle, writing on the label of the specimen he sent me, "This I consider an extremely well-marked plant." In 1886 I gathered fine specimens by the Dee, near Braemar, but at that time they were simply put aside, as Mr. Backhouse returned them to me without any attempt at naming them; whilst in 1887 the crags in Glen Callater yielded a further locality; and in 1890 the Rev. E. F. Linton sent me the same plant from Glen Dole, Forfar. Last year Mr. Marshall collected it on Ben Chaistel, near Tyndrum, and, what are probably weak specimens of the same thing, from Glen Lochay; whilst the Rev. Augustin Ley and I found it in splendid condition on Craig Dulyn, Carnarvon, near Babington's original station, from which locality a full description and excellent drawing were secured.

Allied to *H. cæsium* in some respects, notably in general appearance, arrangement of leaves, size, &c., it differs from all forms of that species in important particulars, the long, narrow, cylindrical buds, short divaricate peduncles, and frequently adnate heads affording a facies by which it may be easily recognised. The plant ranges in height from 10 to 18 in. Radical leaves ovate-lanceolate, acute, almost entire (in Wales), or somewhat coarsely toothed (in Scotland), gradually tapering into (usually) rather long petioles; bright grass-green, softly hairy on both surfaces, clouded with purple beneath. Stem reddish below, with few long hairs, but rough with short downward-pointing bristles, usually bearing one large shortly-stalked leaf, and often a much smaller one at the point of branching. Heads often crowded, two or three being borne on very short straight peduncles at the end of remarkably straight and divaricate branches, or singly on long straight peduncles. Peduncles very floccose, sparingly hairy and setose. The mature involucre very truncate and conical, dark green to purplish. Phyllaries appressed, rather blunt, margins paler, floccose-tipped when young, as in *H. senescens*, clothed with numerous white black-based hairs, and very sparingly floccose and setose. Ligule glabrous at the tips when expanded, scarcely ciliate when young. Styles faint olive-green beneath.

H. LASIOPHYLLUM Koch, var. PLANIFOLIUM, n. var. — A peculiar form that as yet I have only seen from the Great Doward Hill, Hereford, growing quite near the locality for the type, from which it differs in the remarkably broad, flat, ovate and very truncate-based radical leaves, which are softly hairy, and borne on long shaggy petioles. The stem is ordinarily simple, dividing at the top into from two to four rather short, erect peduncles, giving the panicle a crowded and very narrow appearance. The heads are small, but in other respects resemble the type. When I gathered it with Mr. Ley in 1889, I referred it to a form of *H. pallidum* Biv., but on a sheet sent with other things to Dr. Lindeberg he erased this name, adding, "Non H. pallidum, cujus foliæ sunt rigide pilosa, nec, ut in hac forma, molliter! Folia Hieracii pallidi sunt

basi sensim decurrentia, nec abrupta. Capitula Hieracii pallidi sunt fere duplo majora, crinigera, parum glandulosa at floccosa. Hæc forma propria species videtur!" We found it between the localities for *H. stenolepis* Lindeb. and *H. lasiophyllum* Koch, and it certainly bears strong resemblances to both these species; but I have not as yet sufficient evidence of hybridity to express a definite opinion on this point.

H. LASIOPHYLLUM Koch, var. EURYODON, n. var. — This name I give to a widely distributed form that has puzzled many collectors. Moncrieff Hill, Perth, has perhaps yielded the most striking specimens. Its distribution in Britain extends from rocks on the summit of Dartmoor, where it was found in 1880 by the late Mr. T. R. Archer Briggs, to the Little Craigindal, in Aberdeenshire. The Rev. E. S. Marshall has gathered a remarkably glaucous, cæsious and graceful form of it on Craig Maskeldie, above Loch Lee, Forfar. Dr. White has sent me specimens from Killiecrankie and the Falls of Tummel, in Perthshire, in addition to the Moncrieff Hill station, where we gathered it together. The Rev. H. E. Fox collected it from Glaramara, near Keswick, and the Rev. A. Ley from Llanberis, Carnarvon, and I have a specimen collected in 1866 by Mr. J. Sim from the Slack of Birnie. Unlike the last variety, the radical leaves are long and narrow, subentire towards the apex, but cut towards the base into extraordinarily broad, triangular, unequal teeth. This character is less observable in specimens dwarfed by great exposure, as on Dartmoor and the Little Craigindal, but is at once reproduced directly the plant is cultivated. It is usually of smaller and more graceful dimensions than the type. Specimens from various localities have from time to time been sent to Dr. Lindeberg, who has in most cases placed it to *H. lasiophyllum* in the aggregate, pointing out differentiating characters (which I hope to indicate fully in my Monograph), and adding at one time, "Nova pulcherrima forma;" at another, "Forma nova elegantissima, ab Hio," &c. The small habit, graceful form, and glaucous colour are characters that remain constant when cultivated under favourable conditions.

**H. rubicundum**, n. sp.—This is a handsome, well-marked, and widely distributed species, occurring chiefly on the western side of Great Britain, extending from Sutherland to Brecon. It occurs also in Co. Donegal, N.W. Ireland, where it was gathered by Mr. H. C. Hart in more than one locality in Innishowen. Its nearest ally is, probably, *H. caledonicum*. This plant is of very robust habit, from 10 to 20 in. high, with a rosette of three or four rather broad lanceolate radical leaves, gradually narrowed at the base into shaggy petioles, almost entire, though bearing small teeth, or more coarsely dentate (Sutherlandshire); the texture is firm and coriaceous, the colour dull bluish green, much clouded on both surfaces with purple, glabrous above, and with soft white hairs beneath. The lower stem-leaf is large, of much the same character as the radical leaves, but sessile or very shortly stalked. There is usually a second small bract-like leaf. Heads few (1–4, seldom more), large and showy. Involucre robust, rounded at the base, dark green. Phyllaries rather blunt, appressed, clothed with short black-based hairs and numerous setæ with green glands, sparingly

floccose, margins pale green. The peduncles are long and straight, thickened upwards and flattened, floccose, with green-tipped setæ and few black-based hairs interspersed. The outer ligules are glabrous, the inner sparingly ciliate. Styles slightly olive-green on the under surface. Pappus very tawny. The Rev. E. S. Marshall and I gathered it abundantly by mountain streams near Inchnadamff and Lochinver, in West Sutherland; the Rev. E. F. Linton has sent it from two localities near Moffat, Dumfries; and the Rev. Augustin Ley from several Welsh localities. We gathered it together last summer on mountains in the neighbourhood of Bethesda, Carnarvon, where fine specimens were secured for growing, drying, and describing, and from one of which an excellent drawing was made by my late sister-in-law, Mrs. Mackenzie. I have sent the plant to Scandinavia on two occasions; once Dr. Lindeberg merely wrote, "H. novum;" another time, "Hæc ab omnib. formis Hieracii murorum bene distincta!"

H. HYPOCHÆROIDES Gibs. (GIBSONI Backh.), SAXORUM, n. f. vel var. —This is a very marked aberration from the type, discovered by the Rev. A. Ley on red sandstone mountain rocks at 1200–1400 ft. near Capel Cellwen, Brecon, and on slate rocks near Rhaiadr Falls, Montgomery. These are the only instances in which I have known this extraordinarily well-marked species to occur off the limestone; and whether the marked differences in the facies of the plant are simply due to geological causes, I am at present unable to say, not having yet cultivated this form with the type, and under similar conditions. It should be borne in mind that typical *H. hypochæroides* occurs in Wales at Castell Dinas Bran. The whole habit of the variety is coarser, and more straggling than the type. The radical leaves are on the average narrower and more acute, of a paler green, and appear to entirely lose the characteristic purple blotches as they advance in age, although when young they are just as beautifully spotted as in the type. The peduncles are longer, and less straight and rigid; whilst the phyllaries are more acute, darker, and with much less markedly white margins; the styles are pure yellow, as in the ordinary form.

(To be continued.)

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## ON NATURAL HYBRIDS.

By William H. Beeby.

RECENTLY in these pages the question of Natural Hybrids has been discussed, and as it is a subject in which British botanists are daily taking an increasing interest, I offer a few observations in the hope of inducing fresh workers to enter the field.

The anti-hybrid paper to which I more particularly refer does not contain any argument supported by evidence, or any account of experiments made, and consists of fiction rather than of fact; its matter does not suggest that the author has studied the literature of the subject, or that he has applied to any hybrid-monger for

assistance in the way of living roots wherewith to experiment, or for other help. On one point I would remark:—Given a wood containing a wind-fertilised monoicous shrub, and a fairly-marked variety of the same, there are few botanists but would expect to find them accompanied by innumerable hybrids showing every intermediate state. Such hybrids, however, are not of the grade which makes them much worth naming, but it is always interesting to know that a species will cross with its variety, as is probably the case in this instance, since a few cases to the contrary are on record. As a matter of fact, the number of natural hybrids recorded between species and their varieties is small indeed compared with that recorded between plants which are generally accepted by botanists as distinct species.

A paper dealing with hybrids, but omitting all allusion to the phenomenon of sterility, is a distinct novelty; and the time seems a fitting one wherein to recapitulate briefly a few of the main facts known to us concerning Hybridity, as well as to suggest what assumptions we are entitled to make on the basis of the knowledge afforded by these ascertained facts. I shall deal chiefly with sterile hybrids, because, until these are understood and admitted, it is useless to attack the much more difficult and complicated question of the fertile hybrids. But a word with regard to Sterility:—I very much doubt whether there is any permanent sterility among Phanerogams, except such as is due to hybridity. A plant may fail to fruit owing to its environment; it may be able to live and thrive and flower, but its present habitat may be too hot or too cold, too wet or too dry, to permit of its fruiting; but this state can hardly be considered as other than dependent on the temporary conditions. A plant may be temporarily unfruitful through disease. Again, some plants, especially such as are either actually or functionally monoicous or dioicous, not unfrequently fail to produce fruit simply because they have not been fertilised; but this is merely *virginity*, it is not *sterility*.

With regard to what we know to be absolute facts, I presume it will be admitted by all that we know that two distinct species, that is, two species which are not connected by intermediates, may in many cases be artificially cross-fertilised; that fertile seed may result; that the plants springing from such seed will usually present external characters more or less intermediate to the two parents; that in being commonly entirely or partially sterile they present a totally new character not common to either parent! But there are also some things that we do not know; I think I may fairly say that we do not know of any two distinct species (like, for example, *Viola canina* and *V. Riviniana*) which, when growing alone under their normal environment,* are without any tendency to approach

* I say "under their normal environment" advisedly, because under altered conditions plants often assume temporary states resembling other permanently distinct species; thus the state of *Ranunculus hederaceus* called "var. *omoiophyllus*" somewhat simulates *R. Lenormandi;* the land state of *R. Lenormandi* (= *R. lutarius* Revel?) simulates *R. intermedius;* the state of *Epilobium montanum* called "forma *aprica*" simulates *E. Duriæi;* the state of *Sparganium simplex* called "var. *longissima*" simulates *S. affine*, and so on.

each other, but which, when growing together, are (hybridity excluded) not unfrequently accompanied by forms externally intermediate, and, *mirabile dictu*, presenting the entirely new character of total sterility! Secondly: we do not know of any variable species in which the two extremes are perfectly fertile, while the intermediates are entirely sterile, all being under the same environment. But the phenomena described exactly agree with what we know to be the facts resulting from cross-fertilisation, and they are also exactly represented among wild plants by such hybrids as *Viola canina* × *Riviniana*, for example. Until, then, our opponents can explain these "sterile intermediates" in some other way, we are justified in assuming them to be what they exactly resemble, without testing the matter by artificial crossing in every case.* Speaking of past and present glaciation, Dr. Wallace writes in *Island Life* (ed. 2, p. 108):—"The two sets of phenomena are so exactly identical that no one who has ever compared them can doubt that they are due to the same causes." These words apply admirably to the case as it stands between natural and artificial hybrids; but we can go further, for many wild hybrids have had their counterparts produced by artificial crossing in gardens.

When an intermediate form is fertile, or nearly so, it is naturally a more difficult question to decide whether it be an intermediate form connecting two supposed distinct species, or whether it be really a fertile hybrid.

In conclusion, I append a list containing a small selection of hybrids from Dr. Focke's *Pflanzen-Mischlinge;* the parents of these are natives of Britain, but the hybrids have most of them not yet, I believe, been noted in this country. I have omitted all allusion to various critical genera which are already the subject of special study here, as well as many other forms, for one reason or another:—

Ranunculus acris × bulbosus; R. Sardous × sceleratus.

Papaver dubium × somniferum; P. Rhœas × somniferum; P. dubium × Rhœas.

Nasturtium amphibium × silvestre; N. palustre × silvestre; N. palustre × amphibium.

Cardamine amara × silvatica.

Helianthemum Chamæcistus × polifolium.

Viola arenaria × canina; V. arenaria × "silvatica"; V. lactea × Riviniana.

Dianthus deltoides × Armeria.

Lychnis diurna × alba.

Stellaria graminea × uliginosa.

Hypericum perforatum × dubium; H. perforatum × tetrapterum; H. dubium × tetrapterum; H. humifusum × perforatum.

Medicago falcata × sativa.

Potentilla argentea × Tormentilla.

Alchemilla alpina × vulgaris.

Pyrus communis × Aria; P. Malus × torminalis; P. Malus × Aria; P. Aria × torminalis; P. Aucuparia × Aria.

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* For some facts as to sterile hybrid Violets, see *Journ. Bot.* 1889, p. 226.

Erigeron acris × canadensis.
Senecio vulgaris × silvaticus; S. silvaticus × viscosus.
Carduus; Cirsium; numerous hybrids.
Centaurea Cyanus × Scabiosa.
Lactuca saligna × virosa.
Gentiana campestris × germanica.
Galeopsis ochroleuca × angustifolia.
Ajuga reptans × pyramidalis.
Rumex; Polygonum; numerous hybrids.
Orchidaceæ; numerous hybrids, many of which might occur here.
Carex vulpina × remota; ovalis × remota; curta × remota; distans × Hornschuchiana; pallescens × punctata; hirta × vesicaria; riparia × vesicaria; filiformis × riparia (C. evoluta *Hartm.*); filiformis × paludosa (C. Kochiana *Schüb.*); flacca × paludosa.
Scirpus lacustris × Tabernæmontani.
Calamagrostis epigeios × lanceolata; C. epigeios × arenaria.
Avena fatua × sativa.
Bromus mollis × racemosus; and various other grasses, &c.

Those interested in this subject will, I hope, find in the above list some useful hints as to what to look for. For fuller details, Dr. Focke's interesting work should be consulted.

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## WALTER WATERS REEVES.

On May 18th, at Middleton Vicarage, near Pickering, Yorkshire, passed away Walter Waters Reeves. He was the eldest son of Thomas Waters Reeves, and was born on February 14th, 1819, at Beckley, Sussex, receiving his education at the Cranbrook Grammar School, under Dr. Davies. After leaving school, he was articled to a surgeon at Maidstone, where he devoted his spare time to the pursuit of Botany, and here completed his first herbarium, which was a very good one, and which he subsequently parted with when prevented by other occupations from carrying on botanical work. He thought nothing of rising at an early hour of the morning and walking twenty miles or more before breakfast, if by these means he could secure a plant he was in want of; indeed, it is probable that, considering his other duties at this period, most of the plants of his own collecting were obtained during the early morning hours.

After leaving Maidstone, he was assistant to a surgeon at Farnham, and subsequently occupied a similar position at Tunbridge Wells. About this time he turned his attention to photography, employing the wax-paper process, and, applying this to his favourite study, he prepared a complete series of negatives of British ferns. He was for a few years engaged in this line of business, but did not find it particularly remunerative.

In 1864 he was elected a Fellow of the Royal Microscopical Society, and in 1868 was appointed to the post of Assistant Secretary, which he held for a period of sixteen years; on his resignation he

was presented by the Society with a gratuity of £100 in consideration of his services, and in 1890 he was elected a member of the Council. He was also one of the original founders of the Quekett Microscopical Club in 1865, and was at various periods a member of the Council and Excursion Committee. He was one of the most constant attenders at all the meetings, and was naturally appealed to in all questions relating to systematic botany.

During the time he was at the Royal Microscopical Society, as soon as he found he had sufficient leisure he again commenced the collecting of plants to form a second herbarium, and during the summer recess in different years he visited many districts in Great Britain that he might see the plants in their native habitat.

He was very regular and indeed abstemious in his habits, and this no doubt conduced to the general good health which he enjoyed. Toward the close of 1891 he began to fail, and on the 30th of January went to his sisters at Middleton Vicarage. His botanical and other collections were sent to him at Middleton, and from time to time he was able to talk about them to congenial visitors with his old interest. But his disease—cancer of the stomach—caused him much suffering, and he finally succumbed in the early morning of the 18th of May.

By his death, perhaps the last remaining link which connected the present generation of botanists with the school of Borrer and the period of W. J. Hooker's *British Flora* has been severed. Mr. Reeves was a field botanist of the old type: he was an enthusiastic collector, and had a good knowledge of plants in the field, but the newer methods of investigation did not attract him, and we have understood that he classified his specimens in accordance with the Linnean system. He printed but little, his longest paper being a list of plants observed at Farnham in 1843–6, published in the *Botanical Gazette* for 1850. He contributed information regarding Surrey plants to Mr. J. D. Salmon, which is utilised in the *Flora of Surrey*, and many London botanists have profited by his help. Three short notes on Surrey and Sussex plants will be found in this Journal for 1871, 1872, and 1874. Reeves was a member of the Botanical Record Club, the Report of which for 1883 contained a premature announcement of his death.

We are indebted to Dr. F. H. Ward, an intimate friend of Reeves, for the personal information contained in this notice.

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# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 152.)

**Silene Cucubalus** Wibel, Prim. Flor. Werth. 241 (1799). **1597.** "Almost in every pasture."—Ger. 551.

**S. maritima** With. Bot. Arr. iii. 414 (1796). **1570.** "In aggeribus maritimis Vectis Insulæ."—Lob. Adv. 143.

**S. conica** L. Sp. Pl. 418 (1753). **1724.** "A little to the north of Sandown Castle (Kent), Mr. J. Sherard, in company with Mr. Rand."—Ray, Syn. iii. 341.

**S. anglica** L. Sp. Pl. 416 (1753). **1634.** "Lychnis segetum parva viscosa flore albo."—Johns. Merc. Bot. p. 49. "This Mr. Dent, apothecary in Cambridge, found among corn near the Devilsditch in Cambridgeshire."—R. Cat. 202 (1670).

**S. acaulis** L. Sp. Pl. ed. 2, 603 (1762). **1641.** "Caryophyllus montanus minimus sive C. pumilio alpinus . . . Mosse Pinkes."—Johns. Merc. Bot. pars alt. p. 18. "On the steep and higher Rocks of Snowdon-Hill, in Carnarvonshire, almost everywhere; observed by Mr. Lloyd, or another Welsh Gentleman."—Ray, Syn. i. 141 (1690).

**S. Otites** Sm. Fl. Brit. i. 469 (1800). **1650.** "Found on Newmarket Heath, Mr. Sare."—How, Phyt. 86, 2.

**S. nutans** L. Sp. Pl. 417 (1753). **1670.** "On the walls of Nottingham Castle, found by T. Willisell."—Ray, Cat. 202.

**S. noctiflora** L. Sp. Pl. 419 (1753). **1690.** "Found by Mr. Dale among corn."—Ray, Syn. i. 141. "Between Newmarket and Wood-ditton" (Cambs).—Ray, Syn. ii. 201.

**Lychnis alba** Mill. Dict. ed. 8 (1768). **1629.** "Lychnis sil. flo. albo."—Johns. Kent, p. 8.

**L. diurna** Sibth. Fl. Oxon. 145 (1794). **1597.** "Common in many places."—Ger. 385.

**L. Flos-cuculi** L. Sp. Pl. 436 (1753). **1570.** "In uliginosis pratis Angliæ."—Lob. Adv. 189.

**L. Viscaria** L. Sp. Pl. 436 (1753). **1670.** "Upon the Rocks in Edinburgh Park, Tho. Willisel."—Ray, Cat. 202.

**L. alpina** L. Sp. Pl. 436 (1753). **1811.** "On rocks near the summit of Clova in Angusshire. First observed by Mr. [G.] Don in 1795."—Linn. Trans. x. 342.

**L. Githago** Scop. Fl. Carn. ed. 2, 310 (1772). **1538.** "Githago . . . est illa herba procera, que in tritico flavescente existit, inde corollas apud morpetenses meos pueri in die divi baptistæ texunt vulgus appellat Coccle aut pople."—Turn. Libellus.

**Holosteum umbellatum** L. Sp. Pl. 88 (1753). **1775.** "On the city walls of Norwich. . . . First noticed by Mr. John Pitchford in spring, 1765."—Rose's Elements of Botany, p. 447.

**Cerastium quaternellum** Fenzl, Alsineen (1833). **1670.** "Holosteum minimum tetrapetalon," &c. "In glareosiss sterilioribus frequens."—Ray, Cat. 168.

**C. tetrandum** Curt. Fl. Lond. fasc. vi. t. 31 (1793). **1793.** "Discovered by Mr. [James] Dickson on the . . . shores of Inch-Keith and Inch-Combe, in the Firth of Forth." — Linn. Trans. ii. 344.

**C. pumilum** Curt. Fl. Lond. ii. 92 (1778). **1778.** Found by Mr. [James] Dickson "on dry banks near Croydon," Surrey.—Curtis' Fl. Lond. *l. c.*

**C. semidecandrum** L. Sp. Pl. 438 (1753). **1724.** Frequent about London.—Dill. in Ray, Syn. iii. 348, 2.

**C. viscosum** L. Sp. Pl. 437 (1753). **1667.** "Alsine Myosotis

humilior rotundo folio. Neer Hampsteed Church, and in Hide-park." —Merrett, 6.

**C. vulgatum** L. Sp. Pl. ed. 2, 627 (1762). **1634.** "Alsine hirsuta, Myosotis."—Johns. Merc. Bot. p. 18.

**C. alpinum** L. Sp. Pl. 438 (1753). **1690.** "Juxta aquas ad latera montis Snowdon copiose," E. Lloyd.—Ray, Syn. i. 147.

**C. arcticum** Lange. **1887.** Found on Snowdon in Aug. 1886 by Mr. Augustin Ley.—Journ. Bot. 1887, p. 373.

**C. arvense** L. Sp. Pl. 438 (1753). **1660.** "On Newmarket Heath . . . . and almost on every dry bank about Cambridge."—R. C. C. 19.

**C. trigynum** Vill. Fl. Dauph. iii. 645 (1789). **1794.** Found on Ben Nevis by James Dickson in 1792.—Linn. Trans. ii. 290.

**Stellaria aquatica** Scop. Fl. Carn. 2, i. 319 (1772). **1597.** Ger. 487 ("the great Chickweede"), with figure.

**S. nemorum** L. Sp. Pl. 421 (1753). **1724.** "Found by Dr. Richardson in Bingley Parish" (Yorks.).—Ray, Syn. iii. 347.

**S. media** Cyr. Char. Comm. 36 (1784). **1538.** "Herba illa est quam nostrates mulieres vocant Chykwede aut Chykenwede."—Turn. Libellus. "It groweth on olde houses and in all places all most in summer."—Turn. Names, A vij (1548).

**S. Holostea** L. Sp. Pl. 422 (1753). **1562.** "Stychewort groweth . . . in hedge sides and in woddes and shadowy places." —Turn. ii. 13.

**S. palustris** Retz, Prod. ed. 2, 106 (1795). **1690.** "D. Stonestreet invenit in Insula Eliensi & D. Sherrard prope Oxoniam."—R. Syn. ed. 1, 245.

**S. graminea** L. Sp. Pl. 422 (1753). **1597.** "Upon bank sides and hedges, almost everywhere."—Ger. 43.

**S. uliginosa** Murr. Prod. Gott. 55 (1770). **1597.** "In the brinks and borders of wels, fountaines, and shallow springs."—Ger. 490.

**Arenaria verna** L. Mant. i. 72 (1767). **1677.** "On the mountains about Settle in Yorkshire plentifully."—Ray, Cat. ii. 35.

**A. sulcata** Schleich. Mag. Nat. Ges. (1816). *Alsine rubella* Wahl. **1828.** "Ben Lawers . . . sent by the late Mr. J. Mackay in 1796."—Sm. Engl. Fl. ii. 310. "I found the plant upon Ben [Lawers] in Bredalbane and I never observed it any where else. I believe it to be new to Briton. I first found it 1793 in company with Mr. John Macay [Mackay]."—G. Don MS. in Herb. Mus. Brit.

**A. uliginosa** Schleich. Cent. Exsicc. i. 47. **1844.** "Found in 1844 by Mr. John Tatham, Jun., of Settle; Messrs. James Backhouse, Sen. and Jun., of Darlington; Mr. Silvanus Thompson, of York; and Mr. G. S. Gibson, of Saffron Walden, on Widdy Bank Fell" (Co. Durham).—E. B. Suppl. 2890.

**A. tenuifolia** L. Sp. Pl. 424 (1753). **1660.** "In the corn fields on the borders of Triplow-heath" (Cambs).—R. C. C. 9.

**A. trinervia** L. Sp. Pl. 423 (1753). **1597.** Ger. 489 ("Middle Chickweede"), with figure.

**A. serpyllifolia** L. Sp. Pl. 423 (1753). **1597.** Ger. 487 ("fine Cheekeweede"), with figure.

**A. ciliata** L. Sp. Pl. 425 (1753). **1807.** "Discovered in Sept. 1806 by Mr. J. T. Mackay on the calcareous cliffs of a high mountain adjoining to Ben Bulben, Co. Sligo."—E. B. 1745.

**A. norvegica** Gunn. Fl. Norveg. No. 1100 (1772). **1838.** "First gathered on the 27th of April, 1837, on a range of serpentine hills . . . in Unst, the most northern of the Shetland Islands, by the son of Dr. Edmonstone of that place (then only eleven years of age)." Hook. Fl. Brit. ed. 4, p. 182 (1838).—E. B. Supp. 2852 (1841).

**A. gothica** Fries, Mant. ii. 33 (1839). **1889.** "Discovered at Ribblehead, in West Yorkshire, on June 12th [1889], by Mr. Lister Rotheray."—Journ. Bot. 1889, p. 314.

**A. peploides** L. Sp. Pl. 423 (1753), **1570.** "In Angliæ insulis Australibus, ea præsertim quæ Portlandia vocatur."—Lob. Adv. 195.

**A. sedoides** Schultz. (*Cherleria* Linn.). **1774 ?** "Found on Baikval, in the isle of Rum, Scotland."—Lightfoot, Fl. Scot. i. 232 (1777); but see Pennant's 'Tour in Scotland and Voyage to the Hebrides,' 1774.

**Sagina maritima** Don, Hort. Sicc. Brit. 155 (1810). **1810.** Found by G. Don near Aberdeen, and on Ben Nevis (1794); and by R. Brown at Ballycastle, Co. Antrim, 1795: specimens from each collector, with dates, are in Hb. Mus. Brit.—E. B. 2195.

**S. apetala** L. Mant. ii. 559 (1771). **1677.** "Balliol Coll. Garden Walk."—Plot. N. H. Ox. 146.

**S. ciliata** Fr. in Lilj. ed. 3, 713 (1816). **1848.** "Found near Thetford, in Suffolk, by the Rev. W. W. Newbould, on June 6th, 1847."—Ann. & Mag. N. H. 2nd ser. i. 153.

**S. procumbens** L. Sp. Pl. 428 (1753). **1629.** "Saxifraga Anglicana," near Rochester.—Johns. Kent, p. 2.

**S. Boydii** Buch. White in Trans. Bot. Soc. Edinb. xvii. 33 (1887). **1887.** Discovered by Mr. W. B. Boyd on Ben Aan (?), Glen Callater, 1878.

**S. Linnæi** Presl, Rel. Hænk. ii. 14 (1835). *S. saxatilis* Wimm. (1840). **1800.** Sm. Fl. Brit. ii. 504. "Mr. J. Mackay gathered it on Ben Lawers in 1794. Mr. G. Don appears to have found it previously on Mal-ghrdy."—E. B. 2105. R. Brown also found it on Ben Lawers in 1794 (Hb. Mus. Brit.).

**S. nivalis** Fries, Mant. iii. 31 (1842) **1863.** Journ. Bot. 1863, 355. "First detected by Mr. Boswell Syme, amongst specimens collected on Ben Lawers by Prof. Balfour, on August 25th, 1847." Previous records erroneous.—Journ. Bot. 1864, 340.

**S. subulata** Presl. **1690.** "Observed by Mr. Lawson on Whinny-Field-bank by Culler-coats near Tinmouth in Northumberland."—Ray, Syn. i. 146.

**S. nodosa** E. Mey. **1633.** "This groweth plentifully on the boggy ground below the red Well of Wellingborough in Northamptonshire. This hath not been described that I finde. I observed it . . . August 12, 1626. John Goodyer."—Ger. em. 568.

(To be continued.)

## *SHORT NOTES.*

Rubus Chamæmorus as an Irish Plant.—Since first recorded by Prof. E. Murphy in Loudon's *Magazine of Natural History* (vol. i. p. 436, 1829), this alpine bramble has not been gathered in Ireland by any other botanist. Search has been made by two excellent observers, Mr. H. C. Hart and Mr. S. A. Stewart, but hitherto this most interesting plant has escaped the eyes of two of the most practical and skilful of our field botanists. In view of the approaching publication of a second edition of *Cybele Hibernica*, I will now recapitulate all that I know about the locality given in Mr. Murphy's paper, and in Mackay's *Flora Hibernica*. In Loudon's *Magazine* (1829) the station is given as "Plentiful on Glen-Garro Mountain, Tyrone." In *Flora Hibernica* (1836), Mackay says, "On a mountain in the Stranagabrally range, Co. Tyrone." (It is not mentioned in the *Irish Flora*, 1833.) Prof. E. Murphy, writing to us in 1864, says, "Seen by me, in company with Admiral Jones (then Captain Jones), in 1826, on a mountain-top not far from Dart Mountain, over which the boundary-line separating Tyrone from Londonderry runs; it was *very abundant*, and *in flower* when we saw it." Admiral Jones himself (1865), in an annotated copy of Mackay's *Catalogue* of 1825, writes, "On a mountain west of Dart. I cannot give any nearer to the locality. Mr. Murphy and I were covered by a wet fog at the time. We were by way of walking from Mr. Kennedy's Lodge at (I think) Lough Ash to Dart." Thus the matter remains. It will be well to remember that Admiral Jones was, for many years before 1865, accustomed to visit Braemar and the Aberdeenshire Highlands, with the object of collecting lichens; and he must have been familiar with *Rubus Chamæmorus* in its native habitat in Braemar, where it is abundant; and neither did he nor Prof. Murphy in their letters vary at all from their first identification. It is, however, to be regretted that *R. Chamæmorus* has not been gathered in Ireland since the year 1829; and hence doubts have been freely expressed as to the correct identification, which renders it the more desirable that a fresh effort should be made to settle a question so interesting to Irish botanists. That any other species should have been mistaken for it, whether *Alchemilla vulgaris* or *Rubus saxatilis*, seems extremely unlikely.—A. G. More.

New Wilts Plants. — *Ranunculus tripartitus* b. *intermedius* (Knaf.). 5. Hamptworth Common. — *Myosotis repens* D. Don. 5. Bramshaw. Both discovered by E. J. Tatum, Esq., and confirmed.—T. A. Preston.

East Riding Records.—The following records are worthy of special notice. Both were made by my friend, Mr. B. B. Le Tall, M.A., of the Bootham School, York. The identifications have been confirmed by Mr. Arthur Bennett, F.L.S. I take them from the Report for 1890 of the School Natural History, Literary, and Polytechnic Society, which—like those for other years—possesses much interest, as showing the pains taken and methods adopted at the

school to foster a love of Nature in the minds of the pupils:—*Lycopodium annotinum* L. March 12, 1890, "within ten miles of York." The locality may be particularised here as Buttercrambe Moor Wood. This is the first record for Yorkshire itself, and greatly extends the southern limit of the species on the eastern side of Great Britain. South of the border, it was previously known only in Cumberland, Westmoreland, and Carnarvon. — *Hypochæris glabra* L. September 17, 1890, on Allerthorpe Common, near Pocklington. This is not only entirely new to the East Riding, but is also the first *indisputable* record for the whole county. See *North Yorkshire*, p. 245, and *Flora of West Yorkshire*, p. 299.—WILLIAM WHITWELL.

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## *NOTICES OF BOOKS.*

*Phycological Memoirs.* Edited by GEORGE MURRAY, F.L.S. London: Dulau & Co. Pt. i., pp. 28, 8 plates.

THIS publication, "made for the purpose of keeping within the limits of one book the results of researches on Algæ in the Department of Botany, British Museum," will be heartily welcomed by all algologists, not only as promising an adequate investigation and illustration of the algological treasures of the British Museum, but also as affording one more evidence that English botanists have at length become alive to their responsibilities as countrymen of Turner, Harvey, and Greville.

In the present part, five papers are included. The first, and perhaps most important, by the Misses Mitchell and Whiting, is upon the remarkable phæophycean genus *Splachnidium* Grev., which, according to these authors, must be considered as the type of a new order, the essential character being given as "reproduction by spores contained in sporangia which are borne within conceptacles." The writers' chief argument against the contents of the conceptacular sacs being ova,—*viz.*, their great number,—is of course not perfectly conclusive, even when taken along with absence of a pedicel-cell and of an inner sac-membrane; yet it must be said that these points, with the absence of antheridia, tell strongly in favour of this view. It would be of interest to know whether there is any evidence of the existence of flagella on the spores.

Mr. Murray communicates two researches, one on "a fossil Alga belonging to the genus *Caulerpa* from the oolite," the other on the histology of *Dictyosphæria* Dcne. In the former he shows that the *Equisetum*-like fossil from Weymouth, described by Mr. Damon, must be considered as a species of *Caulerpa* (*C. Carruthersii*), with characters resembling those of *C. cactoides* Ag. In the latter paper an admirable account is given of the peculiar method of frond-formation in *Dictyosphæria favulosa* Dcne., by coherence of similar cells into a colony by tenacula similar to those already described by Murray and Boodle in *Struvea*, *Spongocladia*, and other *Siphonaceæ*. Miss Barton contributes an interesting note on malformations in

*Ascophyllum* and *Desmarestia*, which, taken with the galls in *Rhodymenia*, published in this Journal (1891, p. 65), and Mr. A. W. Bennett's researches on *Vaucheria*-galls, will be welcomed as a step towards the adequate treatment of the pathology of Algæ. In the last paper Mr. Batters adds yet another new genus to the British list, already so largely extended by this acute observer. This is *Conchocelis*, a form of shell-boring alga related to *Erythrotrichia*, but differing from that type in being branched.

The general get-up of the new publication is unexceptionable, all the papers being admirably printed and illustrated, although one wonders why the binder's art has been utterly ignored. The parts will be issued "at about half-yearly intervals"; the price of the first, not stated on the wrapper, is 7*s.* 6*d.* R. J. H. G.

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*Die Botanische Mikrotechnik.* Von Dr. A. Zimmermann. Tubingen, 1892. Die Laupp'schen Buchhandlung. 63 figs. Pp. x. 278.

Books on methods of research multiply out of proportion to the researches performed, and in some branches of Natural History, such as the study of Bacteria, the methods of investigating them absorb nearly as much attention as the organisms themselves. The attempt to teach Botany under cover of expounding such methods is not invariably successful, and a small, handy treatise on methods pure and simple is certainly a book to be preferred. The present one is such a book, about as brief and concise as could be expected from the fashions of German scientific literature. It is excellently arranged, well illustrated with original figures, and, so far as we have put it to trial, satisfactory. It begins with a section on general methods, which is followed by another on the microchemistry of plants, dealing with the inorganic and organic compounds in a classified series; then comes a third section on methods for investigating the cell-membrane and contents in detail, and lastly an appendix on the study of Bacteria. It is in fact excellently adapted for reference, a point of first-class importance in a book of this kind. Some of the methods, such as those connected with the use of the microtome, seem to be needlessly elaborate, but this is a common fault. It needs a peculiarly cold-blooded kind of investigator to get accustomed to such prolonged preparation. In many cases where it is usually employed the microtome is absolutely unnecessary; the whole matter might be settled by carefully made hand sections, and the paper written and illustrations drawn while the fixing, embedding, cutting, staining, &c., is in progress, after the methods of microtomy. Some methods advocated in Germany literally consume weeks.

We cordially recommend this little book as the best of its kind we have met with. It is a most useful and handy storehouse of information on this very important subject, which no botanist can afford to wholly neglect. A few hints on the investigation of herbarium material strike us as useful, but, considering the enormous importance of this matter, too brief. In a future edition a good deal more might be added on this head at the expense of certain other parts of the book. It might have the effect, moreover, of

inducing reflection and experiment in the case of the large class of "modern" botanists who speak in lordly contempt of dried plants. Some of the young gentlemen (and ladies) in question might greatly distinguish themselves by making the discovery that dried plants actually have their uses, even though of an ignoble sort. G. M.

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*Nouvelle Flore des Mousses et des Hépatiques pour la détermination facile des espèces.* Par Mons. I. Douin, Professor au Lycée de Chartres. Pp. 186, 1288 figs. Paris: Paul Dupont. 1892. Price *fr.* 5·50. Cloth.

The attention of those who are beginning to study Mosses and Hepatics is invited to this book. Hitherto probably nine out of every ten would-be bryologists have found themselves so overwhelmed with difficulties at the very threshold of the subject that they have turned back in despair. All further progress has been effectually barred by the scarcity and high price of good books, the want of illustrations, and of a good and suitable key. The few who have managed to penetrate further into the obscure and unknown region have gained their knowledge from herbarium specimens or from expert bryologists with whom they have had the good fortune to be acquainted. Now, however, the outlook is brighter; the bar is removed. Two pioneers have gone ahead, and opened up the way so that all who will may follow. Let us then pluck up courage, and despair no more!

In the early part of 1891 was published in this Journal the Rev. H. G. Jameson's "Key to the Genera and Species of British Mosses," which is now in the market as a separate publication of 34 pp. and 1 plate. It is a most excellent and practical clue to all the British Mosses, and may be regarded as an indispensable supplement to Hobkirk's *Synopsis*. One of its most praiseworthy features is that, being based upon characters other than the fruit, it enables one to identify even barren plants.

And now comes M. Douin's *Nouvelle Flore des Mousses*, one of a series of cheap and profusely illustrated Floras which is in course of publication in Paris. This is one of those things which are done better in France. The author's notion is to suppress technical terms as far as is possible, to arrange the characters of the plants in tables, and to illustrate each character by a figure inserted in the text, so that the eye can appreciate their differences at the first glance. Thus nearly 1300 figures are employed, and the result is about as clear and practical a key as could be devised. The mere fact that the book is in French need deter no one from using it. So simple are the expressions, and so amply are they explained in the glossary, that they will not frighten the most diffident. The author opens with a short chapter on the life-history of the *Muscineæ*, and proceeds to describe in full seven of the commonest types, of which five are Mosses,—*Polytrichum formosum* Hedw., *Barbula muralis* Hedw., *Hypnum triquetrum* L., *Mnium undulatum* Neck., *Sphagnum cymbifolium* Ehr.,—and two are Hepatics—*Jungermannia albicans* L., *Pellia epiphylla* Corda. To each of these he then applies the

Synoptical Tables, in order to demonstrate how the analysis is to be carried out. In the next chapter he gives lists of Mosses and Hepatics which you may expect to find under given conditions, *e.g.* in woods, in water, on trees, &c. These he follows up with hints as to the collection, preservation, and examination of specimens. Next he puts together in a tabular form those marked peculiarities of structure by which certain genera and species may be recognised at the outset. Then follow in order the copiously illustrated synoptical tables, occupying 87 pp., a glossary of 33 pp., and an alphabetical index, in which are embodied synonyms and the etymology of the generic names.

With M. Douin's etymology we must confess we are extremely dissatisfied, and notably so in the case of the Hepatics. Some derivations, *e.g.* that of *Chiloscyphus*, are radically wrong. When revising the book for a second edition, the author should consult Dumortier's *Hepaticæ Europæ*, where he will find the origin of most of the genera correctly recorded. And here we may indicate some of the misprints which mar the book—*Lliochlaena*, *Chyloscyphus*, *Meesa*, *Mastygobryum*, *Amblysegium*, *Eurynchium*.

It should be noted that M. Douin deals only with the species that are found in the neighbourhood of Paris—*i. e.* some 300 Mosses and 64 Hepatics. These, however, are the common lowland species which a student is likely to gather in England. Mr. Jameson, on the other hand, includes in his "Key" all the British Mosses—some 570 in number; but does not touch the Hepatics.

A. G.

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## *ARTICLES IN JOURNALS.*

*Ann. Sciences Nat.* (Ser. 7, vol. xv.: May). — E. Bescherelle, 'Musci Yunnanenses.'—W. Russell, 'Sur les bourgeons multiples' (4 plates). — E. Belzung, 'Sur la germination, et cristallisations intracellulaires artificielles' (1 plate).

*Bot. Centralblatt* (No. 22).—J. Jäggi, 'Zur Geschichte der *Fagus sylvatica* var. *purpurea*.' — (No. 23). M. Kronfeld, 'Abbildungen amerikanischer Pflanzen und Vögel von Franz Boos (1783–85).'—J. G. O. Tepper, 'Seltene und neue Südaustralische Pflanzen' (*Drosera præfolia* (fig.), sp. n.).

*Bot. Gazette* (May 17). — J. M. Coulter, 'Sereno Watson' (portrait). — D. M. Mottier, 'The archegonium and apical growth of the stem in *Tsuya canadensis* & *Pinus sylvestris*' (1 plate). — B. M. Duggar, 'Germination of teleutospores of *Ravenelia cassiæcola*' (2 plates). — L. H. Bailey, 'Notes on *Carex*' (*C. herbariorum*, *C. Pringlei*, *C. xerantica*, *C. Montanensis*, *C. bella*, spp. nn.). — G. F. Atkinson, 'Automatic device for rolling culture tubes of nutrient agar agar' (1 plate).—C. Macmillan, 'Embryo-sac of *Metaspermæ*.'

*Bot. Jährbucher* (vol. xvi., pt. i.: June 10). — O. Warburg, 'Bergpflanzen aus Kaiser Wilhelms-Land' (*Hellwigia* (Zingiberaceæ), *Zoelleria* (Borragineæ), gen. nov.).—L. J. Celakovsky, 'Gedanken über eine zeitgemässe Reform der Theorie der Blütenstände.'

— F. Kränzlin, 'Beiträge zu einer Monographie der Gattung *Habenaria*.'

*Botanical Magazine* (Tokio: Ap. 10). — K. Okamura, '*Ptilota dentata*, sp. n.' (1 plate).—(May 10). R. Yatabe, '*Machilus Thunbergii* var. *japonica*' (1 plate).—Id., *Euonymus lanceolatus*, sp. n.

*Bot. Zeitung* (May 27–June 17).—W. Rothert, 'Ueber *Sclerotium hydrophilum*, einen sporenlosen Pilz' (1 plate).—B. Stange, 'Beziehungen zwischen Substratconcentration, Turgor und Wachsthum bei einiger phanerogamen Pflanzen.'

*Bull. Soc. Bot. France* (xxxix.: comptes rendus, 1: June 1).—A. Chatin, *Terfezia Hafizi*, *T. metaxas*, *T. Leonis*. — M. Gandoger, *Maillea Urvillei*.— —. Héribaud, 'Additions à la Flore d'Auvergne.' —J. A. Battandier, 'Sur quelques plantes d'Algérie.'— J. Poisson, 'Antiseptique préconisé pour la conservation des objets d'histoire naturelle.'— —. Paris, 'Nomenclator bryologicus.' — A. Le Grand, '*Fumaria media*, *Genista purgans*, *Ranunculus chærophyllos*.'—D. Clos, 'Le Nomenclature binaire en botanique.'

*Bulletin Torrey Bot. Club* (June).—G. F. Atkinson, 'The genus *Frankia* in the United States' (1 plate).—G. E. Cooley, 'Impressions of Alaska.'—E. G. Britton, '*Leucobryum minus*.' — R. S. Williams, 'Flora of a Montana pond.'

*Gardeners' Chronicle* (May 28). — *Curcuma Bakeriana* Hemsl., sp. n.—(June 4). *Oreopanax Sanderianum* Hemsl., sp. n.—(June 11). *Lissochilus Græfei* Kränzl., sp. n.— C. T. Druery, 'British Ferns of the future.'—(June 18). *Aloe aurantiaca* Baker, sp. n.

*Journal de Botanique* (June 1).—M. Micheli, 'Légumineuses de l'Ecuador et de la Nouvelle-Grenade' (1 plate).—L. Mangin, 'Proprietés et réactions des Composées pectiques.'—M. Thouvenin, 'Sur la structure des *Aquilaria*.'

*Oesterr. Bot. Zeitschrift* (June). — F. Arnold, 'Lichenologische Fragmente.' — K. Fritsch, 'Nomenclatorische Bemerkungen.'— R. v. Wettstein, 'Die Arten der Gattung *Gentiana* aus der Section *Endotricha*' (contd.). — H. Braun, '*Galium Mollugo*' (contd.). — A. Hansgirg, '*Ochlochæte* und *Phæophila*.' — A. Topitz, 'Neue oberösterreichische Formen der Gattung *Rubus*.' — J. Freyn, 'Plantæ novæ Orientales' (contd.: *Cousinia bicolor*, *C. Sintenisii*, *C. decolorans*, *C. Onopordon*, spp. nn.).

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## *BOOK-NOTES, NEWS, &c.*

On Saturday, June 4th, the new Biological Station established by the Liverpool Marine Biology Committee at Port Erin, in the Isle of Man, was formally opened by the Lieutenant-Governor of the Island. The station is a three-roomed house of stone, about thirty feet long by twenty broad, built on a concrete platform a few feet above the level of the beach, and at the foot of a high cliff overlooking the bay. The main laboratory is a lofty room twenty-two feet long and twenty broad, with work-tables for five naturalists.

It is lined with pitch pine, and provided with all the necessary apparatus for research. The walls are shelved for specimen jars, whilst the open rafters afford storage-room for dredges, tow-nets, ropes, &c. A strong table runs down the centre of the laboratory for aquaria, and books, microscopes and other apparatus are conveniently stored in set-in cupboards fitted to the walls. Fresh water is collected from a natural spring in a cistern behind the station, and supplied to the work-tables within by a tap. Salt water is of course close at hand. From the short passage leading from the entrance open off two small rooms, six feet by eight, one of which forms a Secretary's office, the other a private laboratory for the Director and members of the Committee. Naturalists who may wish to work at the station may do so on application to the Hon. Director (Prof. Herdman, F.R.S.), University College, Liverpool, on becoming subscribers to the funds of the station to the extent of £1 1s. and upwards per annum. Special arrangements have been made with the proprietor of the Bellevue Hotel, Port Erin, on whose grounds the station is built, whereby naturalists working at the station can be provided with bed and board at a tariff of 6s. 6d. per day. Early application for permission to work in the laboratory is essential.

We regret that space will not allow us to give a detailed sketch of the life of Prof. Sereno Watson, whose death we briefly recorded at p. 128. Full notices will be found in the *Bulletin of the Torrey Club* for April. and in the *Botanical Gazette* for May. From the latter notice, by Prof. J. M. Coulter, which is accompanied by an excellent portrait of Prof. Watson, and a view of the interior of the Gray Herbarium, we extract the following summary:—"Sereno Watson was born December 1, 1826, at East Windsor Hill, Connecticut. He graduated from Yale College in 1847; taught school for several years in different States; studied medicine at the University of New York; was a practising physician for two years at Quincy, Illinois; was Secretary of the Planters' Insurance Company, of Greensboro', Alabama, from 1856 to 1861; became a professional botanist in 1868; was Botanist of Clarence King's U. S. Geological Survey during the seasons of 1868 and 1869; became Prof. Gray's assistant at Cambridge in 1871; and was made Curator of the Gray Herbarium and Library in 1888, a position which he held at the time of his death, March 9, 1892."

The last part (vol. iii., pt. 2) of the *Proceedings of the Natural History Society of Glasgow* contains notes on Wigtownshire, Moffat, and Kirkcudbrightshire plants, by Mr. James M'Andrew, and contributions to the topographical Botany of the West of Scotland, by Mr. Peter Ewing, who also contributes an interesting note on *Juncus tenuis*. This plant, although not then recognised, was collected in Renfrewshire in 1863, and a specimen is preserved in the Greenock Museum.

Dr. F. Buchanan White publishes an interesting address on the Perthshire Flora in the last part (vol. i., part v.) of the *Proceedings of the Perthshire Society of Natural Science*. The previous part

contains his elaborate "Catalogue of the Perthshire Willows in the Museum Herbarium," which we omitted to mention at the time of its publication.

Prof. Angelo Heilprin contributes an interesting paper on "The temperate and alpine floras of the giant volcanoes of Mexico" to the *Proceedings of the American Philosophical Society* for January last.

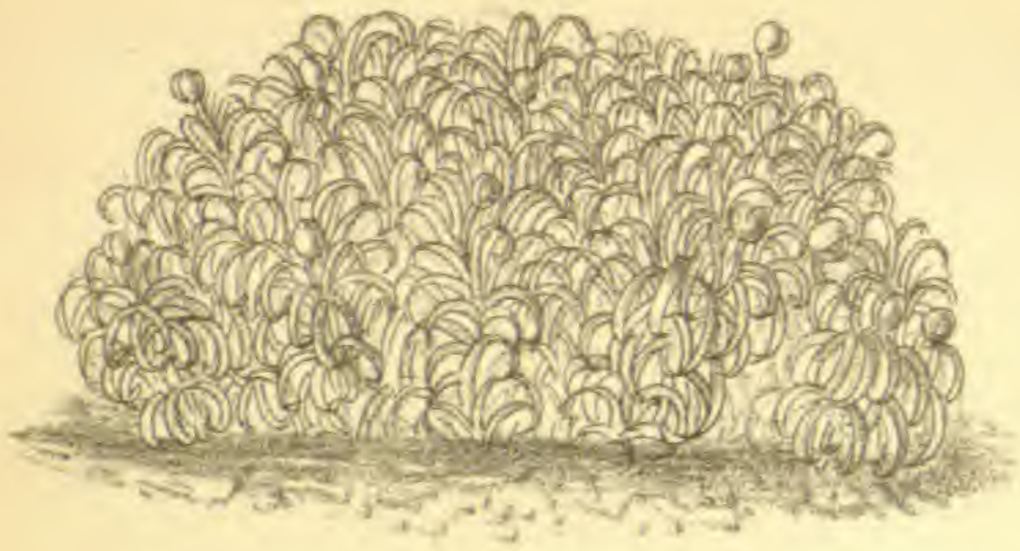
An account of plants introduced at Maryport, Silloth, and Workington, Cumberland, is given by Mr. W. Hodgson in the *Transactions of the Cumberland and Westmoreland Association*, No. xvi.

British botanists, especially London ones, will regret to learn that the introduction of plants into localities where they may become established is being carried on with considerable energy by a member of a London Natural History Society. Hampstead Heath and Keston Bog are two of the places where this pernicious and unscientific action has occurred; and *Parnassia* and *Pinguicula vulgaris* were planted in the New Forest bogs by the same individual. In this case it was possible to nullify the attempt; but the precautions then taken may easily be evaded, and it is to be feared that in some cases the imposition may be successful. We trust that the Society referred to will take steps to dissociate itself from so disreputable a proceeding.

Col. Stirling and Mr. Robert Kidston send us some *Notes on the Flora of Stirlingshire*, reprinted from the *Stirling Journal*, from which it appears that satisfactory progress is being made in the investigation of the botany of that county, for which 712 species and 43 varieties are now recorded.

The Kew authorities have issued a very useful coloured Map of the Gardens and Arboretum (price 2d.), which it is to be hoped may be speedily followed by the long-delayed Guide to the Gardens. The principal "collections of trees and shrubs" are indexed, as well as such more mundane matters as the drinking fountains and the refreshment pavilion—which latter, by the way, was lately the subject of a question in Parliament and of severe animadversion in the *Standard*. The "continuous stream of botanical information" which "pours into Kew" (see p. 191) seems to have been temporarily dammed, for neither the May nor the June *Bulletin* has appeared at the time of our going to press.

The *Speaker* of May 28th, recording the honour lately conferred upon Dr. Dyer by the title of Companion of the Order of the Indian Empire, refers to him as "a botanist by profession, and a folk-lorist by way of relaxation." The versatility of the Kew Director is so well known that it would surprise no one to learn that it embraced the study of folk-lore, but the explanation of the paragraph will be found in the confusion which frequently occurs between Dr. Dyer and his brother, the Rev. T. F. T. Dyer. The latter gentleman is well known as an indefatigable rather than a competent compiler; one of his books is noticed in this Journal for 1889, p. 122, where some light is thrown upon his methods of working.



B

A

A. Cochlearia groenlandica.
B. Sagina Boydii.

R. Morgan lith.

West, Newman imp.

# ON *COCHLEARIA GROENLANDICA* L.

By the Rev. Edward S. Marshall, M.A., F.L.S.

(Plate 326, A.)

The first mention of this plant by Linné occurs in *Hortus Cliffortianus* (1737), Appendix specierum, p. 498, in the following terms:—

"Cochlearia foliis reniformibus integris. *Crescit in* Grœnlandia, *communicata a Cl.* J. Burmanno, *Prof. Bot. Amst. Folia reniformia vel cordata obtusa, margine integerrimo, vel unica utrinque emarginatura obsoleta notata; sunt hæc omnium minima, utpote quæ vix octavam cochleariæ vulgaris foliorum magnitudinem attingunt.*"

It is thus dealt with in *Species Plantarum*, ed. 2 (1793), p. 904:—

"Grœnlandica 4. Cochlearia foliis reniformibus carnosis integerrimis. *Hort. Cliff.* 498.* *Roy. lugdb.* 335. Cochlearia minima repens insulæ alholmiæ. *Barth. act.* 3, *p.* 143, *t.* 144. Cochlearia minima. *Boerh. lugdb. 2, p. 10.*

"*Habitat in* Norvegia, Islandia, Grœnlandia. ⊙.

"*Folia radicalia minima, subtus admodum convexa & carnosa, avenia, integerrima, longius petiolata.*"

I have examined the specimen in the Linnean herbarium. Being rather young, and only in flower, it is less valuable for reference than the type-specimens of *C. officinalis*, *C. danica*, and *C. anglica;* the root-leaves are also mostly withered, and in poor condition. Still, the size and habit of the plant are sufficiently well shown, and it agrees well with the description, as far as the material goes.

Although expressly mentioned by its author as growing in Norway and Iceland, this species is ignored by Nyman, *Consp. Flor. Eur.;* and Hartman, *Handb. i Skand. Flora*, ed. xi. p. 204, remarks, under *C. officinalis*:—"To this, without doubt, belongs the *C. groenlandica* L. given for Norway in *Sp. Pl.*" I strongly suspect, however, that Linné was correct, as it is improbable that a native of the N.E. coast of Scotland should really be absent from the Norwegian shores.

The first discovery of the true plant in Britain was by Mr. W. H. Beeby, who found it in the Shetlands in 1886, the station being on low rocky cliffs. In 1890 Mr. F. J. Hanbury and myself came across a curious form of scurvy-grass on the beach at Lochinver, W. Sutherland, which we recorded as *C. danica*, though it was very unlike all the specimens of *danica* which we had seen. Having subsequently looked at the type of *C. groenlandica*, I began to suspect that my previous notions of that plant were all wrong; and accordingly, on meeting with a quantity of the same form last summer near Tain, E. Ross, I gathered a fair amount, and sent home plants for cultivation. Specimens from both places were forwarded by Mr. Hanbury to Prof. J. Lange, who confirmed them as true *C. groenlandica*. I may add that Greenland specimens at Kew are a very good match.

The only figure of "*C. groenlandica*" that I have been able to discover (besides that in *English Botany*, representing a different plant), is a fragmentary and uncharacteristic one in Reichenbach, which may or may not be right, but is practically valueless.

*C. groenlandica*, as it occurs in N. Scotland, appears to be always prostrate, and is a small plant, rarely four inches across. The leaves are thick and fleshy, nearly or quite veinless, very many, soon withering, varying in shape from reniform to almost triangular-ovate (then recalling small forms of *C. anglica*), often truncate but scarcely cordate at the base. The flowers much resemble those of some of our alpine forms, but the blade of the petals is shorter (scarcely longer than broad), more abruptly narrowed into a long, distinct claw. The pods are as a rule broadly ovate, but vary a good deal in shape; a remark which applies to some other species, such as *C. danica* and *C. officinalis*. They are reticulate-veined *when perfectly ripe;* I find the same thing in a Greenland example.

I suspect that this, like many other so-called "annuals," is often biennial. It has retained its character in my garden, as have *C. danica*, *C. officinalis*, *C. alpina*, and another mountain form which I believe to be distinct.

Besides specimens from two Greenland localities, there are in the Kew collection plants of true *C. groenlandica* from Nova Zembla, and, apparently, from Siberia (although no locality is given, they are queried as "*Cochlearia lenensis?*").

Both Don's and Goodenough's specimens, thus named, are what we now call *C. alpina*. *C. fenestrata* R. Br. and *C. arctica* Schlecht. Fries are also quite distinct from the subject of the present sketch.

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## *SAGINA BOYDII.*

(Plate 326, B.)

We are indebted to the discoverer, Mr. W. B. Boyd, of Faldonside, Melrose, for an opportunity of figuring this very interesting plant. It was found by him in Braemar in 1878, and was collected among a number of other specimens, not attracting notice until the collections were planted out on Mr. Boyd's return home. He does not remember gathering it, and the exact locality is therefore doubtful; but his impression is that it was obtained upon Ben A'an, a hill in the deer-forest of Invercauld, somewhat difficult of access, and not often visited by botanists. Since then Mr. Boyd has had the plant in cultivation, but it has never produced fertile seed, and has been multiplied by division.

Dr. Buchanan White described the plant at length in the *Transactions of the Botanical Society of Edinburgh*, xvii. 32–35 (1887), from which, with his permission, we reproduce his description. It has not hitherto been figured, and will be seen to be extremely different in appearance from *S. procumbens*, of which it has been suggested to be a form.

"Sagina Boydii, n. sp. — Perennial, quite glabrous, densely tufted, the internodes so shortened as to be scarcely visible; leaves crowded, regularly recurved; terminal rosette barren, lateral branches very short, crowded, producing flowers in the axils of the leaves; peduncles erect, about as long as the leaves; flowers pentamerous or tetramerous; sepals always more or less erect; petals none; styles very short, widely separated at the base; capsule globose, shorter than the sepals.

"Forming dense cushions. Subterranean stem much branched, rooting. The aërial portion of the stem erect, about half an inch high, below which the stem is clothed with decaying leaves. Apex of the stem forming a barren rosette, surrounded by very short lateral branches. Leaves so closely imbricated that the internodes are invisible, about a quarter of an inch long, rather fleshy, rigid, widely and shallowly channelled above; midrib rather prominent below, tip with a short mucro, strongly and regularly recurved, dark shining green. Peduncle one-flowered, and with the flower about as long as the leaves, narrowed upwards, quite glabrous. Flowers erect, or nearly so. Flowers pentamerous or tetramerous. Sepals rather unequal, widely ovate, blunt, concave on the inner side, never spreading, scarcely veined, of a paler green than the leaves, margin very narrowly paler and submembranous. Petals none. Stamens opposite the sepals, longer than and incurved over the ovary; anthers oval, the cells a little divergent at the apex. Ovary globose, flattened at the apex, which is covered by a cluster of about 11 or 12 semiglobular shining pale yellow papillæ, round which cluster is a slightly thickened rim (with 5 or 4 points and 5 or 4 angles) to the flattened apex of the ovary. Styles 5 or 4, situated within the points of the thickened rim, their bases separated by the cluster of papillæ, very short, flattened; all the upper surface stigmatic, projecting horizontally. Capsule globose, shorter, and covered by the sepals; valves 5 or 4, opposite to the sepals, valves entire at the tip. When the capsule opens, the flattened top falls away. Seeds few, minute, dark brown, formed like others of the genus, and covered with flattened tubercles."

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## NOTES ON POTAMOGETONS.

By Arthur Bennett, F.L.S.

(Continued from Journ. Bot. 1891, 307.)

Potamogeton serotinus "Schrad. in litt." ap. Koch, Syn. Fl. Germ. ed. 2, p. 775 (1844). *P. natans* β. *prolixus* Koch, *l. c.* *P. natans* β. *fluviatilis* Fr. Nov. Fl. Suec. ed. 2, p. 28 (1828). *P. natans* var. *angustifolius* Meyer, Chl. Hann. p. 519 (1836). *P. natans* β. *angustifolius* Led. Fl. Ross. vol. iv. p. 23 (1853). *P. spathulatus* Nolte, Nov. Fl. Hols. p. 17 (1826), *fide* Prahl. — According to an authentic specimen, "assentiente cel. Nolte," this seems to belong to *natans*, but I have seen no specimens in fruit. Material is wanting to prove whether it is more than a state of *natans*.

P. PETIOLARE Presl! Deliciæ Pragenses, 1, p. 151 (1822). *P. natans β. foliis ellipticus* Gussone, Fl. Sic. Synop. 1, p. 206 (1842), non Gaudin, Fl. Helv. 1, p. 467 (1828).—This must be referred to *fluitans* Auct. *P. petiolaris* Rafinesque, Med. Rep. 2, hex. 3, p. 409, 1811, is unknown to me.

**P. Delavayi,** sp. nov.—Stem simple, semiterete, striated, 9–12 in. high; lower leaves entirely decayed; intermediate mostly decayed, linear-lanceolate, 4–5-veined with slender transverse nerves; upper leaves coriaceous, ovate-lanceolate or nearly lanceolate, 9–11-veined, with many branched cross-nerves, and chain-like areolation over the whole leaf-surface; 9–18 lines long, 6 lines broad. Stipules mostly decayed, 9 lines long, blunt, many-nerved. Peduncles slender, 2–3 in. long, nearly equal, but slightly enlarged in the central portion. Spikes 9–11 lines long, dense-flowered. Perianth-leaves mostly decayed, rhombic-orbicular, clawed. Fruit (drupelets) reddish when half-ripe, 2 lines long, ventrally curved to the centre, with 2 basal blunt tubercles, dorsally ½-circular, sharply keeled round to the basal attachment, and extending ½ line below it; secondary (2) keels not prominent. Beak subcentral. Embryo curved to two-thirds of a circle, the upper end sharply incurved.

L'Abbé Delavay in Herb. Mus. Paris, No. 4750. Eaux courants des fosses dans la plaine de Ta-li, 20 September, 1888. Province of Yun-nan, China; ex Franchet.

Plant with the habit of the narrow-leaved forms of *P. polygonifolius* Pour., but with very different fruit, being three times the size of that species, and in shape quite unlike it. I have seen nothing like this from the central or northern provinces of China, Mongolia, or Manchuria. The Kansu (Potanin!) and Gobi (Potanin!) specimens of *polygonifolius* are the usual form of that plant as it occurs in shallow water. The Abbé Delavay's specimens have evidently grown in about 9–12 in. of water, the lower leaves being nearly all decayed, as the specimens were in good fruit. With quite the aspect of the narrow-leaved forms of *polygonifolius*, this plant has the ventral outline of the fruit much like that of *P. condylocarpus* Fieber.

P. JAPONICUS Franchet & Savatier, Enumer. Plantæ Japonicæ, 2, p. 15, 1879, name only.—By the kindness of M. Franchet, I have seen the original specimen of this plant, which, he tells me, was not to hand at the time the *Enumeratio* was printing, and has never been described as *japonicus*. It proves to be a narrow-leaved state of *P. mucronatus* Presl! Epim. Bot. 1849. *P. malaina* Miq.! Ill. Fl. Ind. Arch. p. 46, 1871.

P. SPATHULATUS Schrader ap Koch et Ziz.! Catal. Pl. Palat. pp. 5 & 18 (1814). *P. rufescens* Schrad. var., Meyer, Ch. Hann. p. 522 (1836). *P. Kochii* F. Schultz! Arch. de la Fl. d. France et All. p. 61 (1842). *P. oblongo-rufescens* Schultz, Flora, No. 15, p. 230 (1849). *P. rufescenti* × *natans* F. Schultz! Jahresb. d. Poll. p. 119 (1861). *P. alpino-natans* F. Schultz! in Jahresb. d. Poll. p. 229 (1863). *P. alpinus β. spathulatus* Marsson, Fl. Neu. Pom. und Usedom, p. 490 (1869).

*P. spathulatus* Nolte, Nov. S. 17, 1826, is a form of *P. natans*;

cfr. Prahl Krit. Fl. Sch. & Hol. p. 205 (1890). *P. spathulatus* Kirschlerger, Stat. Veg. Strasbourg. (1845), belongs to *fluitans*; = *P. Billotii* F. Schultz, Arch. Fr. et All. 61 (1842). A specimen named as Schrader's plant (in herb. A. Braun), and gathered by Billot, is evidently not so, but belongs to *fluitans*. An authentic specimen of the original plant (Herb. Mertens), ex herb. Buchenau, shows that this plant must be referred to *rufescens* as (at most) perhaps a subspecies. The only thing that seems to point to hybridity is its non-fruiting, though Dr. Tiselius has sent me Swedish specimens, named "*P. spathulatus* Schrad.," with abundance of fruit; but these Swedish specimens are not exactly the same as the original plant of Schrader, and seem to me to be only a state of *rufescens*, produced by the water-level having become higher after the plant had flowered and fruited under normal conditions. In *Flora* for April 12th, 1849, Dr. Schultz has an excellent article on this plant, and says that wherever it grows it occurs where *P. oblongus* (*polygonifolius*) and *P. rufescens* grow abundantly in company, and that the flowers always remain closed. This is strong evidence of hybridity, but the plant in habit is *rufescens*. I should much like to obtain a plant to cultivate.

P. "HYBRIDUS Michx.," ex Makino! in *Illustrations of the Flora of Japan*, t. 55, No. 9, p. 2 (1891), is *P. cristatus* Regel et Maack; Flora Ussuriensis, t. 10, figs. 3–6, p. 9 (1861).

P. NIPPONICUS Makino, Ill. Flora of Japan, t. 56, No. 9, p. 2 (1891), seems to be referable to *P. alpinus* Balbis (*rufescens* Schrad.). Specimens gathered by the Abbé Faurie (Herb. Mus. Paris) in Japan seem to be the plant of Makino; but unfortunately they are in very bad condition, and not sufficient to decide upon.

P. MIDUHIKIMO Makino! Ill. Fl. Japan, t. 54, No. 9, p. 2 (1891), is evidently a new species, combining the habit and foliage of *P. hybridus* Michx. with the fruit of *pusillus* L. It was distributed from Japan by the late M. Maximowicz as "*P. hybridus* Michx.," mixed with *P. javanicus* Hasskl.

**P. tricarinatus** F. Muell. & Ar. Benn., sp. n.—Stem simple (?), 5–20 in. long. Submerged leaves almost all decayed before flowering (or before mature fruit is formed), apparently lanceolate, semi-translucent, and papery in texture, with few nerves. Upper (floating) leaves coriaceous, elliptical, 15–21 lines long, 9–12 lines broad; 15–17-nerved, with very numerous anastomosing cross-veins; under side of lamina with strongly-netted areolation, more prominent towards the midrib; petioles 10–15 lines long, channelled. Stipules soon decaying, 10–15 lines long, acute, semi-translucent, but the veins not prominent. Peduncles nearly equal, moderately stout, 16–22 lines long. Spikes 2–8, dense-flowered, obtuse, 11–18 lines long. Sepals (perianth-leaves) orbicular. Fruit (drupelets) $1\frac{1}{2}$ line long, $\frac{3}{4}$ line broad, compressed, pale yellowish green (or bright green), the ventral face very slightly curved, the dorsal semicircular for two-thirds, then depressed to the beak, the central keel and lateral ridges (keels) carinated and tuberculated, central keel extending to the depression; 2–4 strong tubercles just below the base of the keel, on the side of the

drupelets, and smaller ones irregularly scattered over the surface; beak strongly recurved, and then incurved. Embryo curved to two-thirds of a circle, or rather more.

Habit of some small forms of *P. natans* L. and *P. Tepperi* Ar. Benn.; the foliage of a very bright light green; fruit much like *P. sulcatus* mihi ined., but only half the size, and without the furrows, bossulated rather than muricated, and with two strong teeth at the base of the fruit, projecting downwards.

Australia. In the Yas and Murambridge country, 1831, G. Bennett in Herb. Mus. Brit.! Van Alpin River, F. Mueller in Herb. Kew!

Specimens gathered by the Abbé David in "Mongolia oriental, No. 1949," may belong here, but sufficient specimens have not been seen to warrant such reference as yet.

(To be continued.)

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# AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 205.)

33. R. myricæ Focke. — St. arcuate-prostrate or high-arching, bluntly angular with convex faces or roundish, considerably or rather thinly hairy. *Prickles few, short, subulate, declining from very broad base. L. 3-nate, or a few subquinate.* Lts. almost regularly dentate, green and hairy on both sides; *term. oval, acuminate, cordate. Pan.* narrow; *branches* short, nearly equal, *1- or few-flowered. Sep. externally green*, hairy and aciculate, *very narrow, with long acuminate point, embracing fr.* Pet. oblong, narrow. Stam. about equalling styles.

b. *R. virescens* G. Braun.—*L. 5-nate. Term. lt. ovate, narrowing very gradually into the long acuminate point* from cordate base. Sep. patent in fr., or rarely erect.

*Forms* of type and var. *with numerous very slender and unequal stalked glands, and a few slender declining acicles* (but no prickles) *on pan.*, and more or less mixed armature on st., have been found in plenty by the Rev. A. Ley on Trelleck and Beacon Hills, Monm.—the sole representatives of the species (so far as I know) yet recorded in the British Isles.

34. R. Salteri Bab. St. arcuate-prostrate, angular, sulcate, subglabrous, the few hairs being short and patent, with an occasional stalked gland and acicle. Prickles slender, subpatent or declining from dilated compressed base. L. 5-nate-pedate. *Lts. thin. coarsely and doubly dentate-serrate or lobate-dentate in the upper half*, the serratures becoming simpler and more distant below, thinly hairy above, softly hairy beneath; term. long-stalked, broadly obovate, cuspidate-acuminate, subcordate. *Petiolules thickly clothed with rather short patent white hairs. Pan.* narrowly subpyramidal; cylindrical above, with many few-flowered slender subpatent branches,

and several 3-fid and simple l., the top blunt, and the term. fl. sessile or subsessile, the lower branches distant, long, ascending; *rachis* nearly straight, *hairy, with many weak declining prickles and acicles, and a few nearly sessile glands.* *Sep.* ovate, with long acuminate point, felted, with woolly hairs and an occasional acicle, *embracing fr.* Pet. lanceolate, narrowed below, white. Rare.

This description is drawn chiefly from the Rev. A. Ley's Aconbury plant. Dr. Focke has stated his belief (*B. E. C. Report*, 1887) that his *R. Danicus* (which he considered a plant of the Rev. W. H. Painter's from Bemersley Norton, Staffs., to be) "will prove a mere form of the original *R. Salteri* from Apse Castle Wood."

B. St. usually conspicuously hairy (except in *Colemanni* and *podophyllus*), and sometimes having a few stalked glands. Pan. usually glandular, and somewhat aciculate.

35. R. Colemanni Blox. — *St. strong and high-arching*, angular, sulcate, with a good many short stellate and scattered hairs at first, and a very occasional acicle and stalked gland. *Prickles many, strong*, declining *from very large* dilated compressed *base.* L. 5-nate-pedate. *Lts. remarkably convex*, green on both sides, opaque above, slightly paler and softly hairy beneath with prominent pale nerves, irregularly (and, in the Surrey plant, coarsely) dentate, *often imbricate*, their stalks and midribs strongly armed with hooked and falcate prickles. Pan. long, pyramidal, narrowly cylindrical and truncate above often with simple ovate or cordate-ovate floral l., with several ascending axillary branches below; *rachis hairy, with many strongly-deflexed long-based prickles*, and some acicles and stalked glands in the upper part. *Sep.* loosely reflexed in fr., cuspidate-acuminate or with linear point, *concave*, externally ashy-felted with very narrow white margin, hairy and more or less glandular and aciculate. Pet. large, oval, clawed, pinkish or white. Stam. pinkish, greatly exceeding yellowish styles. Heaths and hedges (Leic., Warw., and Surr.).

A conspicuous bramble with its strong high arching st., curiously convex l., and large prickly pan. In Mr. Bloxam's Leic. specimens the lts. are more rounded in outline and less coarsely toothed than in the Surrey plant.

36. R. micans Gren. & Godr. (1848). *R. hypoleucus* Lefv. & Muell. (1859). *R. adscitus* Genev. (1860). — *St.* bluntly angular, *thickly clothed with stellate and spreading hairs, and having a few* (sometimes very few) *stalked glands.* *Prickles* not confined to angles, mostly strong, but more or less *unequal*, and often passing into acicles, declining or nearly patent from large compressed base. *L. 3-nate and 5-nate-pedate*, rarely digitate. *Lts.* obovate-acuminate, *lobate-serrate*, with crowded compound acute teeth, opaque and subglabrous above, ashy-felted beneath; term. sometimes broadly ovate, though more frequently, like the interm. (when the l. is 5-nate), obovate, subcordate. *Pan. long, leafy, pyramidal-cylindrical*, with topmost branches (1–3-flowered) exceeding the shortly-stalked term. fl.; the lower branches cymose-corymbose, 3–5-flowered, subpatent; the l. and *flexuose rachis* coloured and clothed like st. l.

and st. Sep. acuminate, often leaf-pointed, strongly reflexed, ashy-felted. Pet. large, narrowed to base, white or faintly pinkish. *Whole plant remarkably pale.* Allied to *R. macrophyllus* and *R. villicaulis*, but readily distinguished from both.

Widely distributed in S.W. Engl. (as far E. as I. of Wight), though apparently somewhat thinly, except in Dev., where it is abundant, extending (unlike most Rubi) even to the middle of Dartmoor.

37. R. Questierii Lefv. & Muell.; Genevier, *Essai Monographie*, pp. 182–184 (1869).—St. angular, glabrescent, greenish. Prickles strong, straight, declining or slightly falcate from dilated base. *L.* digitate or subpedate-quinate, *green on both sides*, paler and with close pressed hairs beneath. *Lts. oval-acuminate;* the lateral narrowed to their base, the term. round-based or subcordate. *Pan. narrowly pyramidal*, long, compound, leafy, slightly hairy and felted, *with some stalked glands*, and falcate or declining prickles *and 2 or 3 long oval-lanceolate very acuminate foliaceous bracts, which often exceed the pan. Cal. and ped. white felted.* Sep. oval, with long acuminate points, glandular. Pet. rose-coloured, oval, narrowed below. Stam. white, exceeding the "*salmon or rose-coloured styles.*" Unknown to me.

This description, derived from the longer one in Genevier's *Essai*, is inserted here on account of Dr. Focke's statement (quoted in the *Bot. Exch Club Report* for 1888, p. 206), "I have . . . seen the true *R. Questierii* from different places in S. Engl."

38. R. Sprengelii Weihe.—St. prostrate or very slightly arching, much branched, roundish, hairy. Prickles many, scattered, falcate or declining from broad base; often with a few stalked glands and acicles intermixed. *L. mostly 3-nate*, but becoming 5-nate-pedate or subquinate in rich soil, and then often associated with stouter and more aciculate and glandular stem. *Lts. coarsely and irregularly serrate-dentate, thin*, green on both sides, hairy on veins beneath; *term. long, narrowly elliptic-acuminate, somewhat narrowed to the rounded or subcordate base. Pan.* short, *lax and diffuse*, hairy, felted; the lower branches distant, erect-patent, corymbose, often forming secondary panicles; *the upper branches patent or divaricate, 1–3-flowered or subumbellate, with long slender subequal ped.*, weak declining or falcate prickles, and usually some stalked glands. Fl. rather small. *Sep.* externally grey-green, ovate-acuminate, often leaf-pointed, *patent after flowering, at length ascending.* Pet. narrow, obovate, acute, usually bright pink. Pinkish fil. almost equalling greenish styles. Woods and heaths.

A very distinct and widely-spread species, hardly falling into place in any of our groups, but put here provisionally, as by Dr. Focke in his paper in *Journ. Bot.*, 1890. Dr. Salter's *R. Borreri* (authentic and thoroughly good specimens of which are preserved in the Borrer Herbarium at Kew) I am disposed to place in the next group (No. 48). It is locally abundant in S. Engl., and readily distinguishable from the strong *Sprengelii* form which has so often borne the name.

The closely allied *R. Arrhenii* Lange has not yet been found in

Britain. It has all its st.-l. 5-nate, sharply serrate, and with prominent nerves beneath; orbicular petals and stam. *much* shorter than the styles.

39. R. PYRAMIDALIS Kalt. — *St.* arcuate-prostrate or rather strongly arching, angular, *hairy, usually without stalked glands or with very few.* Prickles nearly equal, slightly declining and slender from dilated compressed base. L. 5-nate-digitate and pedate. *Lts.* yellowish green, doubly acutely serrate, often with some of the teeth patent or recurved, opaque and slightly hairy above, *very softly hairy beneath*, especially at first; term. elliptic-acuminate, usually rather narrowed to the rounded base, rarely subcordate, occasionally (in sunny spots) subrotund cuspidate-acuminate. *Pan. truly pyramidal*, usually narrowing considerably and very gradually above, with many close 1–3-flowered patent branches and 2 or 3 foliaceous bracts; leafy below. *Rachis and ped. thickly clothed with villous hairs and felt;* prickles rather few, subulate; *stalked glands* unequal, but mostly no longer than the hairs, *always present*, often numerous. *Sep.* acuminate, often long-pointed, clothed like the rachis, grey-green, *patent when the pet. fall, afterwards reflexed.* Pet. elliptic, pink. A very beautiful bramble, just intermediate between *R. villicaulis* and *R. leucostachys*. Widely distributed. Hedges and wood-borders.

b. *R. Eifeliensis* Wirtg. — Smaller. St. with more unequal prickles, and a few minute acicles and shortly-stalked glands. Term. and interm. lts. with remarkably long acuminate points. Pan. rather broader and more cylindrical above, with shorter and more distant branches below. Berks. and Dors. Connected with the type by other small forms in Dev. and Hants.

40. R. PODOPHYLLUS P. J. Muell., *Journ. Bot.* 1887, p. 23. — *St. prostrate (or very nearly so)*, bluntly angular, striate, dark purple, *with few hairs, and some shortly-stalked glands, and minute acicles. Prickles scattered*, in parts crowded, *rather small*, straight, declining or even deflexed from long compressed base. *L.* 3–5-nate-pedate, *mostly 3-nate with lateral lts. gibbous or deeply cleft.* Lts. shining, dark green above, convex, much paler beneath and soft with many very short white hairs, irregularly acutely serrate, with a few of the larger teeth patent; lateral oval, with short patent or divaricate stalks; term. long-stalked, broadly oval or obovate, shortly acuminate, subcordate; petioles, petiolules and midribs rather thickly clothed with small prickles, acicles and stalked glands. *Pan.* rather lax, cylindrical or subpyramidal, *racemose above*, with very short hairs and many unequal stalked glands, and slender nearly straight prickles and acicles; branches short, 1–3-flowered, all ascending, except the few 1-flowered upper ones. Sep. grey-green, hairy and felted, glandular, ovate, loosely reflexed or subpatent in fr. *Narrow pet., styles and stam. all faintly greenish-white.*

When living, strongly recalls *R. ramosus*, though separated from it by its prostrate st., very different armature and subracemose pan. It also has obvious affinities with *R. pyramidalis* and (as Prof. Babington points out) with *R. carpinifolius*. Merion. (bushy rocky places near slate quarries) and Yorks.

41. R. LEUCOSTACHYS Schleich. (in Sm. *Engl. Fl.* 1824). *R. vestitus* Weihe.—*St.* arcuate-prostrate, bluntly angular, *villous-hairy and felted*, sometimes with a few acicles and stalked glands. *Prickles long, nearly straight* from dilated compressed base. L. 5-nate-pedate and digitate. *Lts. mostly broad*, wavy at the edge, usually dark green, shining and somewhat hairy above, *softly yellowish or grey-felted beneath;* term. subrotund-cuspidate, or rarely broadly elliptic or ovate, subcordate. *Pan. long, narrow, cylindrical*, with rounded top; *the rachis densely clothed with felt and villous hairs*, usually with some stalked glands and acicles, not unfrequently with a good many; *the prickles straight or declining, long* and rather slender, often crowded and with some strong ones intermixed; the lower branches distant, few-flowered, corymbose, ascending. Sep. clothed like the rachis, ovate-acuminate, or somewhat cuspidate-acuminate. *Pet. roundish*, bright pink, or white. Stam. white or pink, only slightly exceeding the greenish styles.

Very variable, and yet usually well marked by the very hairy st. and rachis, the long straightish prickles, the long narrow pan., and the roundish felted lts. It seems to hybridise as freely as *R. rusticanus*, and (like that) is one of the few brambles which do not object to the presence of lime in the soil. Hedges, wood-borders, &c.

b. *R. conspicuus* P. J. Muell. *R. vestitus* Bab. prius.—Less hairy in all its parts, especially in st. *Lts.* nearly glabrous above, *with close* white or grey *felt beneath*, but *wanting the softness so characteristic of the type.* Pan.-prickles mostly very long and strong. Fl. bright pink. Dr. Focke seems disposed to regard this as a hybrid between *R. bifrons* and *R. leucostachys.* If this is really its origin, we are probably mistaken in including it in our list, as *R. bifrons* has not yet, I believe, been recognised as a British plant.

c. *angustifolius.* I suggest this name to distinguish a strongly-marked var. which is rather frequent in several of the S. and S.W. counties of Engl., and especially attracted Dr. Focke's attention in 1889. L. almost wholly 5-nate-pedate. *Lts. remarkably narrow, nearly simply serrate, with rather close yellowish felt beneath, and prominent nerves; term. fully twice as long as broad, narrowly oblong or obovate-acuminate, with long point and long petiolule;* interm. and even bas. very similar. Strongly armed with unequal prickles. Otherwise like type.

42. R. GYMNOSTACHYS Genev. *R. macrothyrsos* J. Lange. — *St. long*, arcuate-prostrate, bluntly angular, striate, villous-hairy, but more thinly than in *R. leucostachys*, and *hardly felted*, mostly without stalked glands. *Prickles unequal, declining, or slightly falcate* from long dilated and compressed base. L. 5-nate-pedate or digitate. Lts. glabrescent above, softly grey-felted beneath, somewhat coarsely serrate; term. broadly elliptic or obtusangular-elliptic, cuspidate, with subcordate or entire base. *Pan. very elongate, lax, narrowly pyramidal;* the topmost branches 1–3-flowered, with long trifid bracts; the interm. distant, of nearly equal length, mostly 3-flowered, also furnished with trifid bracts, and not unfrequently with 1 or 2 simple ovate-acuminate floral leaves below; the lowest axillary branches 3–5-flowered, or rarely corymbose-racemose and

many-flowered; all ascending; the rachis clothed as in *R. leucostachys*, but with slenderer declining prickles passing into acicles. Sep. clothed like the rachis, ovate-acuminate or ovate-cuspidate, with linear point, yellowish at base. *Pet. narrowly elliptic or slightly obovate*, pink. Stam. white, hardly exceeding the greenish styles.

This might perhaps take rank only as a well-marked var. of *R. leucostachys*, though it looks very different when growing beside it; and Dr. Focke prefers keeping it distinct. Damp bushy ground (Wales and S.W. Engl.).

In this group, I believe, and probably (as Prof. Babington has suggested) near *R. Sprengelii*, should come *R. rubricolor* Blox.; but I have not numbered it or attempted a detailed description, because I have seen no barren stem issued by Mr. Bloxam. It has remarkably lobate-dentate foliage, and a lax hairy and slightly glandular pan. Besides the Warw. plants, Prof. Babington would, I believe, now thus name those of Rev. A. Ley's from Heref. and Glost., which for a time he was disposed to put to *R. erubescens* Wirtg. Dr. Focke has also suggested Bloxam's name for a more strongly armed but otherwise similar plant found by the Rev. R. P. Murray near Woking, Surrey.

(To be continued.)

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# SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Continued from p. 142.)

Sect. VI. Malvinda Grisebach, Fl. Brit. West Indies, p. 73.—Herbæ vel suffrutices. Bracteolæ 0. Flores petiolis haud adnati. Calyx angulatus raro teres post anthesin non accrescens. Carpella dehiscentia sæpe biaristata.

† Calyx angulatus.

† Folia integra vel non profunde lobata.

α. Caules erecti vel prostrati. Folia angusta linearia vel linearilanceolata basi acuta vel subcordata.

* Carpella 5.

34. S. linearifolia St. Hil. Fl. Bras. Merid. i. p. 180; K. Schum. Fl. Bras. Fasc. cix. p. 300.

Hab. Brazil. Minas Geraes! St. Paulo.

35. S. viarum St. Hil. *l. c.* p. 182; K. Schum. *l. c.* p. 301.

Hab. Brazil. Minas Geraes! St. Paulo. Argentine Republic.

Var. Balansæi K. Schum. *l. c.* p. 301.

Hab. Paraguay, *Balansa*, No. 1599.

36. S. Laplaensis K. Schum. *l. c.* p. 302.

Hab. Brazil. Minas Geraes, *Riedel*, No. 1686.

37. S. serrata Willd. in Spr. Syst. Veg. iii. p. 111; K. Schum. *l. c.* p. 313.

Hab. Dutch Guiana. Venezuela.

Var. ABSCISSA Willd. *l. c.* p. 111.
Hab. British Guiana! Venezuela.

* * Carpella 8–10.

— Flores axillares pedunculi longi vel longissimi.

38. S. ANGUSTISSIMA St. Hil. *l. c.* i. p. 179; K. Schum. *l. c.* p. 336.
Hab. Brazil. Minas Geraes!

Var. MORITZIANA K. Schum. *l. c.*
Hab. New Granada, nr. Maracaybo, *Moritz.*

39. S. ELLIOTTII Torr & Gray, Fl. i. p. 231. *S. gracilis* Elliott, S. Car. ii. p. 159.
Hab. United States. Florida! Texas! Arizona. Mexico.

40. S. LINDHEIMERI A. Gray, Pl. Lindh. pp. 5 & 31.
Hab. United States. Texas! Louisiana! Mexico.

41. S. LONGIPES A. Gray, Pl. Wright, i. p. 19.
Hab. United States. S.W. Texas. New Mexico.

— — Flores subumbellati-congesti.

42. S. NEO-MEXICANA A. Gray in Proc. Am. Acad. xxii. p. 296.
Hab. New Mexico. Mexico.

*β.* Caules erecti vel prostrati. Folia oblonga vel oblongo-linearia vel lanceolata basi truncata, rotundata, vel subcordata.

* Carpella 10–12.

43. S. POTENTILLOIDES St. Hil. Fl. Bras. Merid. i. p. 178; K. Schum. *l. c.* p. 334. *S. cordifolia* var. *potentilloides* Griseb. in Goett. Abhand. xxiv. p. 44.
Hab. Brazil, Prov. Missionum. Uruguay, Argentine Republic!

44. S. DUBIA St. Hil. et Naud. in Ann. Sc. Nat. ii. Ser. xviii. p. 50.
Hab. Brazil. Rio Grande do Sul!

45. **S. Barclayi**, sp. n. — Caule erecto ligneo ramoso, foliis petiolatis lanceolatis serratis discoloris molliter pubescentibus supra cinereis subtus albo-cinereis basi rotundatis vel subcordatis, stipulis linearibus, floribus axillaribus et ad apicem ramulorum aggregatis leviter pedunculatis, sepalis molliter pubescentibus ovatis acutis vel subacuminatis, petalis sepalis longioribus, carpellis 10–12 bicornutis lateribus reticulatis.
Hab. San Salvador. Gulf of Fonseco, Sierra de Conchagua, *Barclay*! Herb. Mus. Brit.
Stem $1\frac{1}{2}$–3 ft. or more; leaves 1–$1\frac{3}{4}$ in. long, $\frac{1}{2}$–$\frac{3}{4}$ in. broad; petiole $\frac{1}{2}$ in.; sepals $\frac{1}{4}$ in.; carpels $\frac{1}{8}$ in. long.
Res mbling in some points *S. spinosa* L., in others *S. cordifolia* L.

* * Carpella 5.

46. S. AURANTIACA St. Hil. Fl. Bras. Mer. i. p. 185, t. xxxv.
Hab. Brazil!

Var. FRAGRANTISSIMA K. Schum. *l. c.* p. 312.
Hab. Brazil. Minas Geraes, *Riedel.*

γ. Caules erecti infra petiolo tuberculo vel aculeo. Folia linearia vel oblonga vel ovato-lanceolata basi rotundata vel subcordata. Carpella 5 raro 6 vel 7.

— Flores subgloboso-capitati.

47. S. Riedelii K. Schum. *l. c.* p. 296.

Hab. Brazil. St. Paulo, nr. Sorocaba, *Riedel*, No. 2021.

— — Flores plures pro axilla.

48. S. spinosa L.; DC. Prod. i. p. 460. *S. alba* L.; DC. *l. c.* p. 460. *S. alnifolia* L.; DC. *l. c.* p. 461. *S. pimpinellæfolia* Mill. Dict.! *S. subdistans* St. Hil. et Naud. Ann. Sc. Nat. Ser. 2, xviii. p. 50! *S. scabra* Schum. et Thon. Pl. Guin. p. 305. *S. glandulosa* Roxb. ex W. & A. Prod. *S. retusa* Wight Cat. No. 195, non L. *S. boriana* Wight Cat. No. 1872. *S. erecta* & *S. minor* MacFad. Fl. Jam. i. pp. 79, 80. *S. affinis* Schmidt, Fl. Cap. Verd. (1852), p. 285. *S. hyssopifolia* Presl, Reliq. Haenk. ii. p. 109.

Hab. Tropics and subtropical regions generally.

Var. angustifolia Griseb. Fl. Brit. West Indies, p. 74. *S. angustifolia* Lam.; DC. Prod. i. p. 459. *S. linearis* Cav.; DC. *l. c.* p. 460. *S. Milleri* DC. *l. c.* p. 472. *S. heterocarpa* Engelman; Gray, Pl. Lindh. p. 163. *S. tenuicaulis* Hook. f. in Trans. Linn. Soc. xx. p. 232.

Hab. Tropical and Subtropical America! Galapagos Is.! West Indies! India! East Indies!

Var. salviæfolia. *S. salviæfolia* Presl, Reliq. Haenk. ii. p. 110. —Foliis anguste oblongis serratis basi rotundatis vel subcordatis, carpellis 7 biaristatis.

Hab. Mexico, nr. Acapulco, *Haenke*!

δ. Caules erecti. Folia lanceolata suboblonga basi cuneata vel subcuneata. Flores subumbellati congesti. Carpella 5–6.

49. S. acrantha Link, Enum. ii. 203; DC. Prod. i. p. 472; K. Schum. *l. c.* p. 303.

Hab. Brazil. Minas Geraes.

50. S. subcuneata St. Hil. Fl. Bras. Merid. i. p. 184; K. Schum. *l. c.* p. 303.

Hab. Brazil. Minas Geraes.

ε. Caules erecti vel decumbentes. Folia ovata vel ovato-oblonga basi rotundata vel cuneata. Carpella 5.

51. S. jamaicensis L.; DC. Prod. i. p. 460; K. Schum. *l. c.* p. 304. *S. hermannioides* H. B. K. Nov. Gen. et Sp. v. p. 200. *S. tristis* Schl. in Linnæa, iii. p. 320. *S. sericea* Mill. Dict.!

Hab. West Indies. Jamaica! Cuba! St. Thomas! Central America! New Granada. Peru! Brazil.

ζ. Caules erecti vel prostrati. Folia oblonga, ovata, obovata, rhomboidea vel lanceolata basi cuneata vel rotundata.

— Flores glomerati vel subsolitarii subsessiles.

* Carpella 5.

52. S. glomerata Cav.; DC. Prod. i. p. 460. *S. hirsutissima* Mill. Dict.! *S. patula* Pers. Ench. ii. p. 243. *S. mollis* Rich. Act.

Soc. Nat. Par. *fide* Sagot. *S. Berteriana* Balb.; DC. Prod. i. p. 460. "*S. viridis* St. Hil. et Naud. Ann. Sc. Nat. 2nd Ser. xviii." *fide* Triana & Planchon, Prodr. 175; but I find no such name in the volume cited.

Hab. West Indies! Central America! Tropical South America!

— — Flores breviter pedunculati vel subsessiles.

* * Carpella 7–10.

53. S. ACUTA Burm. Fl. Ind. p. 147; K. Schum. *l. c.* p. 326. *S. ulmifolia* Mill. Dict.! *S. planicaulis* Cav.; DC. Prod. i. p. 461. *S. orientalis* Cav.!; DC. *l. c.* p. 461. *S. brachypetala* DC. *l. c.* p. 460. *S. Balbisiana* DC. *l. c.* p. 460. *S. scoparia* Lour.; DC. *l. c.* p. 460. *S. spiræifolia* Link, Enum. ii. 205. *S. betulina* Lag. Hort. Madr. *S. lanceolata* Retz, Obs. iv. p. 28. *S. jamaicensis* Vell. Fl. Flum. vii. t. 10. *S. brasiliana* Schur in Link Enum. Hort. Berol ii. p. 203. *S. repanda* Roth; DC. Prod. i. p. 460. *S. Stauntoniana* DC. *l. c.* p. 460. *S. Schrankii* DC. *l. c.* p. 472. *S. ovata* Don, Gen. Syst. i. p. 492. *S. rugosa* Schum. et Thon. Beskr. p. 304. *S. Vogelii* Hook. Nig. Fl. p. 231. *S. glabra* Nutt. in Journ. Acad. Phil. vii. p. 90. *S. lanceolata* Roxb. Fl. Ind. iii. p. 175. *? S. Berlandieri* Turcz. in Bull. Soc. Mosc. xxxi. p. 197.

Hab. Tropical and subtropical regions.

Var. CARPINIFOLIA K. Schum. *l. c.* p. 326. *S. carpinifolia* L.; DC. Prod. i. p. 461.

Hab. Tropical and subtropical regions.

Var. STIPULATA K. Schum. *l. c.* p. 327. *S. stipulata* Cav.; DC. Prod. i. p. 460.

Hab. Tropical and subtropical regions principally of the New World.

Var. HISPIDA K. Schum. *l. c.* p. 327.

Hab. Peru, *Lechler*, No. 2398.

Var. GARCKEANA. *S. Garckeana* Polak. in Linnæa, xli. p. 551. —Foliis ovatis serratis strigosis basi angustis floribus pedunculatis pedunculis brevis interdum articulatis carpellis circiter 7 breviter bicornutis.

Hab. Costa Rica, *Polakowsky*, No. 433!

I have not attempted to distribute the synonyms under the various varieties. The type *S. acuta* Burm. is principally confined to India, Malaya, China, and the Philippine Islands.

— — — Flores breviter pedunculati.

* * * Carpella 7–8.

54. S. GREWIOIDES Guill. & Perr. Fl. Seneg. i. p. 71. *S. subrotunda* Hochst in Herb.

Hab. North-east Africa! Mozambique! Socotra!

— — — — Flores longe pedunculati.

55. S. CAPENSIS E. & Z., non Cav.; Harv. in Fl. Capensis, i. p. 167. *S. longipes* E. Mey. in Herb. Drege.

Hab. Cape. East Griqualand! Natal.

Var. CANESCENS. *S. longipes* var. *canescens* Szyszyl. Enum. Polypet. Rehman, p. 127 (1887).

Hab. Transvaal!

⁂ Carpella plerumque 8–12.

56. S. RHOMBIFOLIA L.; DC. Prod. i. p. 462; K. Schum. *l. c.* p. 337, t. lxiii. *S. angustifolia* Mill. Dict.! *S. scoparia* Vell. Fl. Flum. vii. t. 12. *S. capensis* Cav.; DC, Prod. i. p. 461. *S. frutescens* Cav.; DC. *l. c.* p. 461. *S. Hondensis* H. B. K. Nov. Gen. et Sp. v. p. 261. *S. semicrenata*, *recisa*, et *erosa* Link. Enum. ii. pp. 202 & 203. *S. Kohautiana* et *Haenkeana* Presl, Reliq. Haenk. ii. pp. 104 & 108. *S. truncatula* Blanco, Fl. Filip. p. 548. *S. corynocarpa* Wall. Cat. No. 1870. *S. Lonchitis* St. Hil. et Naud. Ann. Sc. Nat. Ser. 2, xviii. p. 50. *? S. incerta* St. Hil. et Naud. *l. c.* p. 51. *S. ostryæfolia* Webb, Frag. p. 49. *S. ruderata* Macfad. Fl. Jam. p. 80. *S. trinervia* Splitz. ex De Vriese in Neder. Kruid. Arch. i. p. 339. *S. riparia* Hochst in Herb. *S. Fosteri* Montr. in Mem. Acad. Lyon, 1860, p. 182. *S. verrucosa* Poepp. in Herb. *S. maderensis* Lowe, Prim. p. 35.

Hab. Tropical and subtropical regions.

Var. SCABRIDA Masters in Hook. Fl. Brit. Ind. i. p. 324. *S. scabrida* W. & A. Prod. p. 57.

Hab. India!

Var. RETUSA Masters, *l. c.* *S. retusa* L.; DC. Prod. i. p. 462. *S. chinensis* Retz et Roxb. Hort. Beng. p. 97. *S. philippica* DC. Prod. i. p. 462.

Hab. India! Philippine Islands! Malaya!

Var. RHOMBOIDEA Masters, *l. c.* *S. rhomboidea* Roxb. Hort. Beng. p. 50. *? S. rhombifolia* Wall. Cat. 1862, F. *S. orientalis* Cav.; DC. Prod. i. p. 461.

Hab. India!

Var. OBOVATA Masters, *l c.*

Hab. India!

Var. CANESCENS DC. Prod. i. p. 463.

Hab. Senegal. Central America.

Var. POHLIANA. *S. Pohliana* Presl, Reliq. Haenk. ii. p. 108.

Hab. Peru.

Var. CANARIENSIS Griseb. Fl. Brit. West Indies, p. 74. *S. canariensis* Willd.; DC. Prod. i. p. 462.

Hab. Tropical and subtropical America! West Indies! Canary Islands!

Var. OVATA. — Foliis ovatis irregulariter serratis fere concoloris petiolatis, floribus axillaribus pedunculatis pedunculis petiolis longioribus ultra mediam articulatis, stipulis linearibus, carpellis biaristatis.

Hab. Baluchistan. Mehrab Tangi, alt. 4000 ft., *J. H. Lace*, No. 3491!

Possibly allied to *S. grewioides* G. & P.

Var. COMPRESSA. *S. compressa* DC. Prod. i. p. 462.

Hab. India!

Var. SURINAMENSIS K. Schum. *l. c.* *S. surinamensis* Miq. in Linnæa, xxii. p. 469.

Hab. Brazil! Guiana! Peru.

Var. Poeppigiana K. Schum. *l. c.* p.
Hab. Peru!

Var. subtomentosa K. Schum. *l. c.* p.
Hab. Mexico. Brazil. Paraguay.

Var. gorgonea. *Sida gorgonea* Lowe in herb. — Caulibus erectis vel prostratis stellato-pubescentibus foliis parvis oblongis serratis molliter pubescentibus petiolatis, floribus axillaribus et ad apicem ramulorum aggregatis pedunculatis pedunculis articulatis, petiolis longioribus, carpellis circiter 6 biaristatis aristis divaricatis retro-setulosis.
Hab. Cape Verd Islands, St. Jago, *Lowe*!

Var. pusilla. *S. pusilla* Cav.!; DC. Prod. i. p. 461.
Hab. Islands of Mahé, Seychelles.
The leaves of this plant are not white underneath, and the carpels are biaristate.

57. S. callifera Griseb. Cat. Pl. Cub. p. 25.
Hab. Cuba!

58. S. corylifolia Wall. Cat. 1865; Masters, *l. c.* p. 324.
Hab. Burmah. Java! Philippines! Hongkong!

*η*. Caules adscendentes rufescentes. Folia ovato-oblonga vel lanceolata basi rotundata vel truncata. Carpella 9–10.

59. S. rubifolia St. Hil. Fl. Bras. Merid. i. p. 183, t. xxxiv.; K. Schum. *l. c.* p. 321, t. lxi.
Hab. Brazil. Minas Geraes!

60. S. adscendens St. Hil. Fl. Bras. Merid. i. p. 182; K. Schum. *l. c.* p. 341.
Hab. Brazil. St. Paulo.

*θ*. Caules erecti. Folia ovata vel lanceolata basi subcordata. Carpella circiter 10.

61. S. Xanti A. Gray in Proc. Am. Acad. xxii. p. 296.
Hab. Lower California.

*ι*. Caules erecti vel procumbentes. Folia oblonga retusa basi cuneata. Carpella 5.

62. S. Schimperiana Hochst. in Rich. Fl. Abyss. i. p. 66. *Dictyocarpus truncatus* Wight in Ann. Sc. Nat. Ser. 2, xi. p. 169.
Hab. India! Abyssinia! Equatorial Africa!

*κ*. Caules erecti. Folia elliptico-ovata vel ovato-lanceolata vel oblonga basi truncata.

* Carpella 5.

63. S. chapadensis K. Schum. *l. c.* p. 317.
Hab. Brazil. Minas Geraes.

* * Carpella 12.

64. S. montana K. Schum. *l. c.* p. 335.
Hab. Argentine Republic.

(To be continued.)

## BOTANICAL NOMENCLATURE.

[The following important memorandum has been sent out from Berlin by a Committee consisting of Profs. Ascherson, Engler, Schumann, and Urban, and has already obtained the signatures of a large number of botanists. We may take occasion to comment upon it later; but it seems well to reproduce it at once, in order that our readers may consider the principles it lays down. The list of genera which is appended to the memorandum is presumably not intended to be complete, so we do not reproduce it. Adhesions should be sent to Prof. Engler, Potsdamerstrasse 73, Berlin.]

Since the time of Linnæus, botanists have continually endeavoured to gain a uniform nomenclature, and these endeavours were completely justified on account of an easier mutual understanding. We know very well that certain differences will always remain, because the decision on some questions only depends on the author's subjective opinion. But we hope that a gradual and continual reformation will bring an essential improvement. O. Kuntze's *Revisio Generum* has raised an evident perturbation, and will cause a complete confusion; therefore we thought it necessary to propose the following four resolutions, which refer only to the genera:—

I. The starting-point of the priority of the genera as well as the species is the year 1752, resp. 1753.

II. Nomina nuda and seminuda are to be rejected. Pictures alone, without diagnoses, do not claim any priority of a genus.

III. Similar names are to be conserved, if they differ by ever so little in the last syllable; if they only differ in the mode of spelling, the newer one must fall.

IV. The names of the following larger or universally known genera are to be conserved, though after the strictest rules of priority they must be rejected; in many of them the change of the names now used is by no means sufficiently proved.

Ad I. After Alph. DeCandolle had proposed to take the year 1737 as the starting-point of the priority of genera, many botanists had acknowledged it. But we think that the turning-point from the ancient botany to our modern science rests in the introduction of the binomial nomenclature. Therefore we propose, after a previous communication with Alph. DeCandolle, to remove the starting-point for both, the species as well as the genera, as far as to the year 1753, resp. 1752, date of the *Species Plantarum*, ed. 1 (1753), with the 4th ed. of the *Genera Plantarum* (1752). Before that time, the scientific position of Linnæus is not superior to Tournefort, Rivinus, and many other botanists, who often had described and segregated the genera more exactly than he did.

Ad II. Many genera have been founded on a picture only, without a diagnosis. No doubt, by means of it a species sometimes

can clearly be made out and recognised, and, if the picture is a good one, all the characteristics of the plant can be observed. But a picture can never show the special characteristics alone, which raise the genus above the other of its affinity. A genus only gains priority by a verbal diagnosis, and *nomina nuda* and *seminuda* are to be rejected; therefore the following works cannot claim a right of priority:—Rumphius, *Herbarium Amboinense* (1741–1755); Burmann, *Flora Indica* (1768); Patr. Browne, *History of Jamaica* (1756); Lamarck, *Illustration des Genres* pro parte, &c.

Ad III. There are to be conserved *Adenia* as well as *Adenium*, *Acnista* as well as *Acnistus*, *Alectra* as well as *Alectryon*, *Apios* as well as *Apium*, *Rubia* as well as *Rubus*, *Bellis* as well as *Bellium*, *Chloris* as well as *Chlorea* and *Chlora*, *Glyphæa* as well as *Glyphis* and *Glyphia*, *Calopogon* as well as *Calopogonium*, *Atropa* as well as *Atropis*, *Galax* as well as *Galaxia* and *Galactia*, *Danaë* as well as *Danais*, *Drimia* as well as *Drimys*, *Glechoma* as well as *Glechon*, *Hydrothrix* as well as *Hydrotriche*, *Micranthus* as well as *Micrantheum*, *Microtea* as well as *Microtus*, *Platystemma* as well as *Platystemon*, *Silvæa* as well as *Silvia*, &c.; we doubt that there is any scholar who will confound them. On the contrary, *Tetraclis* and *Tetracleis*, *Oxythece* and *Oxytheca*, *Epidendrum* and *Epidendron*, *Oxycoccus* and *Oxycoccos*, *Asterocarpus* and *Astrocarpus*, *Peltostema* and *Peltistema* are only different modes of spelling the same word, and the newer one is to be refused, if they name different genera.

Ad IV. The impulse that led to the acknowledgment of the right of priority was only the vivid desire to create a stabile nomenclature. If we see that by the absolute and unlimited observance of the principle we probably gain the contrary of what we intended, we, who have ourselves made the rules of priority as a law, have the right to amend the latter. Therefore we present a list of genera that have more than a merely scientific interest, or that are very large, and we propose to conserve them in spite of the rules of priority, in order to avoid a general confusion by the change of many thousand names.

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## STRATHEARN HIERACIA.

By James Cosmo Melvill, M.A., F.L.S.

Since, for the first time for several years, I am precluded from visiting the above district this summer, it may not be amiss to place upon record the Hawkweeds that have come under my notice there since 1875. These have been derived mainly from two sources; *viz.*, Ben Chonzie (3048 ft.), Carn-a-Chois, a lower spur of the same mountain, above Ochtertyre, with the hills encircling Glen and Loch Turrit, about three miles N.W. of Crieff; and, secondly, the Glen Artney valley, in the neighbourhood of Comrie, down which flows the River Ruchill, to join the Earn just above Comrie, having on the east the Glen Artney Woods, and on the west those of Aberuchill. All these localities are situated in West

Perth, (87) of the Watsonian vice-counties. The Rev. E. F. Linton and Mr. Frederick Hanbury have both looked through, and either named or confirmed the naming of, the specimens in my herbarium, for which service I am much indebted to them.

I.—*Hieracia of Ben Chonzie and immediate surroundings.*

*H. eximium* Backh. var. *tenellum.* Locally abundant on precipitous escarpments and crags of Ben Chonzie, at and above 2700 ft.

*H. senescens* Backh. Very luxuriant on Ben Chonzie, 2500 ft. and upwards.

*H. iricum* Fr. Not so common as the next.

*H. anglicum* Fr. Abundant by all the watercourses on all sides of Glen Turrit, and frequent on Ben Chonzie and contiguous hills.

*H. vulgatum* Fr. A small variety with reddish leaves and stems, at low elevations, Carn-a-Chois and Glen Turrit.

*H. aggregatum* Backh. A form. Of this conspicuous plant I only secured two specimens, growing on high precipitous ledges on the S.E. face of Ben Chonzie, immediately overhanging the small loch at the head of the corrie above Loch Turrit. One of these specimens had thirteen heads of flowers. Mr. Hanbury considers this plant best referred to *H. aggregatum;* it is a little more luxuriant than the normal form I have seen from the neighbourhood of Braemar, but agrees in the chief characters; and West Perth is, I think, a new county record for it.

*H. pictorum* Linton. Not unfrequent. Ben Chonzie, at 2500 ft.

N.B.—Besides the above, are one or two Hawkweeds not exactly determinable as yet. One especially, growing on the S.E. precipitous ledges of Ben Chonzie, at about 2400 ft., has leaves growing in a rosette, curiously attenuated at the base and acuminate, dark green, spotted with rich brown; cauline leaves nil; styles yellow.

II.—*Hieracia of the Valley of the Ruchill, from Glen Artney Lodge, past Blairmore and Dulrannoch, to the Linn O' Hulich and Comrie.*

*H. Pilosella* L. Some specimens with very lengthened leaves and flower-stalks growing in the Dalrannoch Woods.

*H. iricum* Fr. At the Linn O' Hulich, by the bend of the R. Ruchill, almost opposite the Cuilt Farm, Aberuchill.

*H. anglicum* Fr. At the same place, but more frequent; also above the Altanuish, by the Dalchonzie Hill, and on the banks of the stream just above the Aberuchill Waterfall; likewise on the Aberuchill Hill (Ben Halton).

*H. Farrense* Hanbury. Not common, but unmistakable, below Dalrannoch, on the banks of the Ruchill, August 10, 1888.

*H. murorum* L. Two or three forms.

*H. vulgatum* Fr. In great variety everywhere.

*H. auratum* Fr. Common on both banks of the Ruchill, chiefly between Blairmore, Cuiltebragan, and Dalrannoch.

*H. crocatum* Fr. In similar situations.

*H. corymbosum* Fr. More frequent than the last, and sometimes

extremely luxuriant and perfect; in the lower reaches of the Ruchill, near Comrie, it appears the only accipitrine form, and is frequently curiously distorted by a species of gall.

*H. angustum* Lindeberg. Very abundant in 1889 and 1890 between Cuiltebragan Farm and the Linn O' Hulich, on the river-bank. Rarer in 1891.

*H. gothicum* Fr. Not common.

*H. prenanthoides* Vill. Frequent by the Ruchill; also on the Altanuish stream, which flows into the Earn, on the Aberuchill estate; and a small form occurs on the shores of Loch Earn.

*H. Dewari* Boswell. Not common. In 1889 and 1890, by a small streamlet, tributary of the Ruchill, in a deep gully just below Dalrannoch, Glen Artney.

*H. boreale* Fr. Neighbourhood of Aberuchill and Dalrannoch, Comrie, but not noticed since 1880, when it was common in the above localities.

*H. tridentatum* Fr. By the Cuilt Farm, Aberuchill, on the banks of a small tributary of the Ruchill, 1875. I have in vain looked for this since. It was named *tridentatum* from specimens collected at this locality by Mr. Hewett Watson, but, judging from the only specimen now in my possession, some affinity to *H. corymbosum* is traceable, so a slight element of doubt exists as to this name being correct.

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## THE BOTANY OF MILANJI.

[The *Papers relative to the Suppression of Slave-raiding in Nyassa-land*, issued in June by the Stationery Office, include an important and interesting paper on the Milanji range of mountains by Mr. Alexander Whyte, who is attached to the staff of Mr. H. H. Johnston, H. M. Commissioner for the British territories north of the Zambesi. The following sketch of the flora will be read with interest. Mr. Whyte's specimens, which are in good condition, have been received at the British Museum. The large "cypresses" referred to are probably a new species of *Widdringtonia;* the "dwarf and scrubby" species belong to the Ericaceæ.—Ed. Journ. Bot.]

"The flora of the mountain proved to be most interesting, the species met with being mostly distinct from those of the plain or even the lower slopes. But, under this heading, I must first attempt to give a short description of the cypresses—the most striking botanical feature of the plateau. The remnant left of these fine conifers is confined to a few of the upper ravines and valleys, the largest forest of them finding a comparatively secure habitat in the damp gorges of the Lutshenya valley. A few old scorched monarchs of the glen lead a precarious existence pretty well up the southern slopes of the main mountain, but, unless steps are taken to protect them,* these interesting relics of the past are

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* Steps have been taken.—H. H. Johnston.

doomed to speedy destruction. It is deplorable to witness the devastating effects of the annual bush-fires, from which even this lofty and almost inaccessible retreat is not exempt. During the dry months of August and September, these fires, originating from the villages on the lower slopes of the mountain, gradually creep up the precipitous cliffs from tuft to tuft of grass, until at last they reach the grassy plateau. Once there, the work of destruction is rapid. The fire rages over the table-land, and eats its way along the edges of the remaining belts of forest, thus annually scorching, if not burning, the bark and timber of the outside trees, and killing outright the young seedlings. In exceptionally dry seasons it appears that these fires have even penetrated some of the damp forests, and hundreds of giant cypresses lay prostrate and piled on each other in all stages of destruction, but generally consumed right through at the base of the tree. I measured several of these dead conifers, and one (by no means the largest to be met with) was 140 ft. in length and $5\frac{1}{2}$ ft. diameter at 6 ft. from its base, and with a clear straight stem of 90 ft. in length. The cones of this species of cypress (which may be new to science) are somewhat smaller than a chestnut of the same shape, *i. e.*, longer than broad, and open into four scales or segments, each having a spur-like knob at its apex, and covering five or six winged seeds. The foliage is of the usual juniper-like description, and the timber is of a dull reddish white colour, of excellent quality, and easily worked. The bark on old trees is of great thickness, consisting of layers annually shed and renewed. I selected sections of this valuable timber tree, which I hope to send home with the other Milanji specimens by an early date. Seeds of it are put in nursery beds in the Residency experimental gardens at Zomba, and I trust the tree will thrive in its new habitat there. One or two other species of *Cupressus* were met with, but of dwarf and scrubby growth.

"Tree-ferns attain to a great size in the damp, shady forests of the plateau, and one I measured was 30 ft. in height and 2 ft. in diameter at its base. I hope to send home sections of them also.

"Never before have I met with more gorgeous displays of wild flowers than those to be seen in some favoured nooks of these highlands. There we observed creamy-white and yellow helichrysums, mingling with purple and blue orchids and irises, and graceful snow-white anemones, all blooming in wild profusion, and rearing their heads from a bed of bright green grassy sward—a floral carpet, which Nature alone can fashion. Altogether we procured several thousand specimens of dried plants of many species, which, I trust, will be of benefit to science, Many of the trees had not come in flower, and the ferns had not matured their fronds and seeds. The grass-lands also had been too recently burned to permit of many of the plants reaching the flowering stage."

## *SHORT NOTES.*

Dianthus cæsius.—On p. 152, the date of the first record of this plant as British is given as 1724, on the authority of Ray's *Synopsis*, ed. iii. 336. This is correct so far as the "Chidderroks" (Cheddar Rocks) plant found by Brewer is concerned; the synonymy quoted from Plukenet, Merret, and C. Bauhin, and the earlier references by Dubois and Doody, apply rather to a one-flowered state of *D. deltoides*. Merrett (*Pinax*, 10) has "*Armeria flore simplici*, William with a single flower, in a Wood beyond Redding." In Ray's *Synopsis*, ed. i. 242, 1690 (Appendix), among the plants communicated by Plukenet, is "Armeriæ species flore summo caule singulari: fortè Caryophyllus sylvestris humilis flore unico C. B. P. Very different from the Maiden-Prick (*sic*), and more truly answering the Name, never having but one single flower on top of the Stalk: growing in England as Mr. Doody informs." In the second edition (1696) this note is inserted under "Caryophyllus minor repens nostras" (*D. deltoides*); but in ed. iii. 336 (1724) it is numbered as a distinct species, no doubt, I think, because Dillenius had seen the Cheddar plant. The locality is thus printed: "It grows in England, as Mr. Doody informs. (And hath since been found in the North of England by Mr. Du-Bois. On Chidderroks in Somersetshire; by Mr. Brewer)." In our copy of *R. Syn.* iii. 336, Dr. Trimen has entered the following note: "'This was gathered (as I think somewhere near the Peake) by Mr. Ch. Du Bois & communicated to me, which I gave to Dr. Plukenet.' (MS. note by Doody in his copy of *R. Syn.* ed. ii. p. 199)." This copy is in the library of the British Museum (969, f. 21). Plukenet figured the plant in *Phytographia*, t. 81 (not 83, as stated by Ray), fig. 3 (1691), and in *Almagestum*, p. 87 (1720), says: "Hic, Partibus Borealibus Angliæ, à D. du Bois, nuper inventus est." This, I think, clearly refers to the specimen collected by Du Bois, and given to Plukenet by Doody, as stated in his note above. A very similar specimen is in Buddle's Herbarium (Herb. Sloane cxxiv. i.), with a ticket containing a reference to *Phytographia*, followed by "found by Mr. Du-bois in ye North." Both figure and specimen represent a small one-flowered state of *D. deltoides*.—James Britten.

Rubus Chamæmorus as an Irish Plant. — July 15th and 16th were spent by my friend W. D. Donnan and myself in a search for this plant, which resulted—as all attempts at its rediscovery in its only Irish station have resulted—in failure. On p. 217 Mr. More has summarised the information we possess regarding Prof. Murphy's discovery. The locality is somewhat definitely specified: "a mountain to the west of Dart," "a mountain of the Stranagabrally range," and "Glengarro" (Glengarrow, which is a townland, and not a mountain), all pointing to the group of hills, ranging from 2100 to 1700 ft. in height, that run westward for six miles from Dart to Mullaghcarbatagh. Along this ridge, accordingly, careful search has been made by Mr. Stewart and Mr. Hart, and now by us. As Mr. Hart has already remarked, a more unlikely range for alpine plants could not be found. The rounded

tops and broad shoulders of the hills are, on the drier places, covered with a mat of *Festuca ovina*, *Aira flexuosa*, *Juncus squarrosus*, *Vaccinium Myrtillus* and *Galium saxatile*, and in the damper spots with *Eriophorum vaginatum* and *Scirpus cæspitosus;* while broad tracts are altogether devoid of vegetation, the bare peat having nothing to cover its nakedness. Mr. Donnan and I spent the first day of our visit in working right along the range from Dart to Oughtnager, examining the northern slope of the hills, keeping a distance of a couple of hundred yards between us, and passing over or close to every summit. On the following day we returned along the ridge to Samel, carefully examining the southern face of the summits. No trace of the Cloud-berry was seen, and the only alpines we obtained (*Saxifraga stellaris*, *Vaccinium Vitis-idæa*, *Salix herbacea*, *Lycopodium Selago*) were gathered at the few spots where the mica-schist breaks through the thick covering of peat, and projects in rugged masses on the slopes. On Crockbrack, far to the eastward, we gathered *Listera cordata*, and at the hotel at Drapers-town saw specimens of *Lycopodium clavatum* which had been brought from the same place; the only other plants of the least interest were gathered on the boggy margin of Lough Ouske, where we obtained *Drosera anglica*, *Vaccinium Oxycoccos*, and *Carex limosa*. The Sperrin Mountains are poorer in alpine and mountain species than any other range of equal height in the North of Ireland, and adding to this the fact that the locality has been now repeatedly searched without success, the evidence against the occurrence of *Rubus Chamæmorus* here appears strong. At the same time, there can be little doubt that Prof. Murphy and Admiral Jones were acquainted with the plant in question; their description of the locality is, as I have said, tolerably definite; while the statement that the plant was very abundant, and in flower when found, negatives the suggestion that an abnormal or deformed specimen of any other species can have been mistaken for it—indeed, we did not see on the range a trace of *Alchemilla vulgaris* or *Rubus saxatilis*, which, though very unlike *R. Chamæmorus*, are the most likely species which Mr. More can suggest. So apparently the matter must still remain as it has remained for over half a century—in a most unsatisfactory condition of uncertainty; and while I should be sorry to assert that the plant may not yet be found, I should be equally slow to recommend any fellow-botanist to devote his time and money to the prosecution of a hitherto fruitless search in such a desolate and uninteresting wilderness.—R. Lloyd Praeger.

Damasonium Alisma in Epping Forest.—A paragraph in *Natural Science* for July comments on the supposed introduction of this plant (there called "*Damesonia*") into a pond in Epping Forest. The comment is based on a note in the *Essex Naturalist* for this year (p. 7), in which Mr. J. T. Powell says:—"In 1890 I received a specimen from a well-known pond in the northern part of the Forest area. As I had dipped in this pond for years without seeing any trace of so remarkable a plant, I suspect it to be a recent introduction." It is unfortunately only too certain (see p. 224) that this pernicious practice of plant-introduction has been carried on lately,

but I think it at least possible that the case of *Damasonium* may be one of survival. When living at High Wycombe in 1867, I found the plant, in no large quantity, in one pond on Naphill Common. It decreased in abundance during the next year or two, and I searched for it in vain in the neighbouring ponds. On revisiting the place in 1890, I found it in its old habitat, and also, in much greater abundance, in a pond and marshy ground at some little distance. This year the plant is exceptionally luxuriant in this latter pond, the specimens floating in the water at some distance from the margin being the largest I have ever seen. There is no reason to suspect an introduction in this case; and it would be interesting to know whether *Damasonium* is one of the plants which disappear for a time and then reappear. It was formerly frequent in the Wanstead and Epping Forest districts (see *Flora of Essex*, p. 326), and Mr. Powell says it was "found in Wanstead Park soon after it was thrown open to the public." The *English Botany* figure (t. 1615) is from a Wanstead specimen, and Sowerby gathered the plant "frequently in Wanstead Park"; and Edward Forster notes on his specimens in Herb. Mus. Brit., "In ponds and gravel-pits on the Forest between Walthamstow and Wanstead." I am inclined to doubt whether Mr. Powell is right in classing *Damasonium* as now existent in the Forest area as an alien; but the lamentable action lately taken renders it impossible to come to any satisfactory conclusion.—James Britten. [A note by Mr. Powell in the *Essex Naturalist* for July, received just as we are going to press, speaks with certainty of the introduction as having been made by the person to whom we referred at p. 224.—Ed. Journ. Bot.]

Fragaria elatior Ehrh.—In *Journ. Bot.* 1891, p. 229, Mr. Druce mentions that *F. magna* Thuillier, Fl. Paris, 1790, is an earlier name; but is this not antedated by *F. moschata* Duchesne, *Histoire Naturelle des Fraisiers*, &c., 1766? On p. 230, Mr. Druce refers *Hippuris vulgaris* var. *fluviatilis* to Roth, 1788; it should be Weber, 1780.—Arthur Bennett.

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## *NOTICES OF BOOKS.*

*The Fauna and Flora of Gloucestershire.* By Charles A. Witchell and W. Bishop Strugnell, assisted by numerous contributors. Stroud: James, 1892. 8vo, pp. xxiv. 302. Price 12s.

Of this handsome book only some forty pages concern us, for to such narrow limits is the Flora of Gloucestershire confined. The remainder of the volume is occupied by the Fauna.

When we look into the contents of these forty pages, we feel as if we had been transported back to the beginning of the century. Even then, however, we should be hard put to it to discover so pretentious and so useless a production, for which we can find no word of commendation. Mr. W. B. Strugnell, who is responsible for the Flora, directs "the attention of botanists to the fact that Professors Harker and Boulger have been for more than ten years engaged upon a complete Flora," and says that his catalogue is

intended "merely as a collector's aid": are collectors in the habit of buying large, heavy and costly books for the sake of a list of twelve pages? We imagine they will prefer a *London Catalogue* marked for the county, which will prove in every respect a more profitable outlay.

But this list, even if correct so far as it goes, is incomplete, and the division of the county into two subprovinces in accordance with what Mr. Strugnell calls "Top. Dic." is not recognised. Like all the rest of the Flora, it swarms with astonishing misprints, *e. g.* "Gallum," "Anterrhinum," "gramminea," "Diyraphis," "Sclerochlsa," "flavium," "Juncas," "monatroba" (p. xix.): and evidences of incredible ignorance abound; e. g. *Draba verna* and *Erophila vulgaris*, *Lotus pilosus* and *L. major*, *Linaria "Minor"* and *L. viscida*, *Phegopteris Robertiana* and *Polypodium calcareum*, stand as separate species, and many other examples might be cited, showing that Mr. Strugnell has not the faintest conception of what is meant by synonymy. *Pteris serrulata* is added to the British Flora, and three forms of *Scolopendrium* are ranked as species: there is also a new Orchis, "*latiflora*, Lam.," for which a Mr. W. A. Shoolbred vouches, but which is perhaps intended for *O. latifolia*, which stands next to it. And this list, phenomenally bad as it is, is the most useful part of the book, so far as phanerogams are concerned!

Of the various other "sections" devoted to the Flora, that on "Celebrated Trees," with illustrations, is interesting. Sect. III., "Notes on Celebrated Plants," is written in a gossiping style, and suggests a country newspaper as its origin—perhaps the "local journal" the editor of which was "happened on" by the writer of the section, "lens in hand, busily absorbed in gazing on a specimen sent him by a botanical friend: leaders, correspondence, advertisements lay on his table unheeded, as the parnassia revealed its beautiful scales and peerless flower." "It is not given to every mortal," he adds, "to see this peerless grass (!) in bloom." There is a wonderful account of Woad, of which "the ancient Greek writers speak under the name of *isatis*, and Latin writers call *Isatistinctoria*" (sic): and among the other "celebrated plants" are Meadowsweet, Dyer's Weed, *Frittillaria* (always spelt thus), and "the Common Carraway (*Carum Cassi*)." Then come "The Gloucestershire Orchidaceæ," among which *Cephalanthera rubra*—*the* Gloucestershire orchid—finds no place: the Rev. W. F. White treats of the Ferns, or "*felices*," as he calls them, introduced by a wonderful passage from "the accomplished author of *The Fern Paradise*." Then we have "some Gloucestershire aquatic plants," among which are *Lepidium ruderale*, *Spiræa Filipendula*, *Epilobium angustifolium*, and such oddities as "*Ænanthe*," "*Lysimmachia*," and the order "*Grammeæ*"; followed by "The Edible Fungi of Stonehouse," attributed to Prof. Buckman, but written, we believe, by his son, Mr. S. S. Buckman. Messrs. G. Holmes and Shoolbred write on Gloucestershire Mosses, and the Rev. H. P. Reader's paper on the Hepaticeæ, published in this Journal for 1885 (p. 331), is reprinted without acknowledgment. This paper forms the first

part of the section entitled "Hepaticæ and Rare Bristol Flora"—the latter part consists of 32 names from Swete's *Flora Bristoliensis*, including such genera as "*Helliborus*," "*Senebria*," and "*Lepedium*."

If there were any indication that the compiler of this work—we are speaking only of the botany—were in the least degree conscious of his incapacities, we should not speak thus severely of the book. But in the introduction he implies that he has collected and arranged the scattered notices hitherto published, collated the lists of local botanists, and examined local herbaria. There is no evidence that this has been done—Mr. J. W. White's *Flora of the Bristol Coalfields*, and his contributions to this Journal, to cite but two instances out of very many, have been entirely ignored,—and it is abundantly plain that Mr. Strugnell would be incapable of doing it. We look to Messrs. Boulger and Harker to produce at an early date a Flora of Gloucestershire which shall be worthy of the name, and in which some adequate and accurate account will be given of the plants of this interesting county.

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*English Botany.* Supplement to the Third Edition, compiled and illustrated by N. E. Brown. Parts 1 & 2. London: Bell & Sons. 1891–2 [1892]. 5s. each.

Messrs. Bell & Sons have intrusted the Supplement to Dr. Boswell's great work on British Botany to Mr. N. E. Brown, of the Kew Herbarium. Mr. Brown does not profess to have a practical acquaintance with critical British plants, and the work is for the most part a bringing together of what has been written on the subject since the publication of *English Botany*, Ed. iii. Had it been confined to this, the result would have been less unsatisfactory, but unfortunately Mr. Brown has not hesitated to express his confident opinion, often manifestly the merest supposition, as to the distinctness of the critical plants referred to. The incapacity of an individual who only knows plants in a dried state to deal with critical forms cannot perhaps be better shown than by reference to Mr. Brown's remarks under *Viola lactea*, in which he states that, although Mr. Watson, Dr. Boswell, and Mr. Bennett could distinguish the variety *intermedia*, he was unable to see any difference.

The first part, consisting of sixty-four pages of matter and six plates, extends as far as *Celastraceæ*. Eight pages are occupied by "additions and corrections" to the preceding fifty-six. One is almost tempted to indulge in a Watsonian calculation as to the total amount of corrections to these fifty-six pages which may be anticipated before the work is finished, if eight pages are necessary during the actual printing of them, to say nothing of corrections to the corrections. We are surprised that Messrs. Bell did not see the desirability of reserving the corrections until the Supplement is completed.

The second part extends to the end of *Rosaceæ*, and consists of 104 pages of matter and but one plate, and this of an introduced plant, although the stated object of the work is to give "coloured figures of British plants."

The seven plates in the two parts comprise three additions to the Flora:—*Ranunculus flabellatus*, *Arabis alpina*, and *Malva cretica*; two introduced plants, *Claytonia sibirica* and *Potentilla norvegica*; the Kentish form of *Polygala amara*, and a substituted plate of *Brassica Napus*. The last-named is decidedly good, and the others compare favourably with those of the original work.

A prominent feature in the Supplement is the substitution of a number of older names in accordance with the results of recent research. There is also a considerable amount of additional synonymy. In the latter connection we may point out the incorrectness of quoting varietal names as synonyms of the broad species, as though the whole could fail to contain its parts. For instance, under *Rosa rubiginosa*, Mr. Brown quotes *R. rubiginosa* var. *comosa* Dumort. and another variety as synonyms. Even if this were allowable, it would be absurd to quote only two of the many described varieties not kept distinct by British botanists. The "nomina nuda" of the *London Catalogue* are in some cases accepted, and in others ignored.

The first part commences with an attempted re-arrangement of the *majus-minus* group of *Thalictrum*. A variety, *T. majus* var. *capillare* N. E. Br., is described, with the following remark:—"The variety *capillare* may be nothing more than a state induced by shade or moisture, or both combined. . . . ." This is not the only instance in which a variety is described on confessedly inadequate knowledge. A number of varieties which Dr. Boswell did not think worth notice, such as the cultivated colour-varieties of *Anemone nemorosa*, are introduced.

No critical group seems too difficult for Mr. Brown to dispose of. Thus he favours us with his views at considerable length on the Batrachian Ranunculi, of which his knowledge appears to be confined to the dried specimens at Kew and South Kensington. The only apparent result is the addition of the name of *R. trichophyllus* var. *demersus* N. E. Br. to the already excessive synonymy.

Dr. Boswell thought it desirable, when there were two about equally common forms of a species, to give varietal names to both, and Mr. Watson adopted the same plan. From Mr. Brown's intended corrections under *Papaver somniferum* and *Cochlearia anglica*, it appears that he did not understand this. The adoption of the generic name *Corion* in place of *Spergularia* gives the opportunity of appending "N. E. Br." to four species and two varieties.

Fifty-five pages are devoted to *Rubus*. A footnote states, "Concerning the members of this very difficult genus I express no opinion, as I have never made any attempt whatever to study them." In spite of this statement, we find Mr. Brown making himself the authority for one specific and five varietal names. The thirty-three pages devoted to *Rosa* are prefaced by a similar disclaimer of any knowledge of the genus, and it is not surprising to find the account is altogether unsatisfactory and incomplete. The great evil of paste-and-scissors work at critical plants is perhaps more apparent here than elsewhere, as varieties of widely different values are placed on the same level, and the synonymy is imperfect

and misleading. To us, the most startling item is the entirely unexplained transfer of a form of *R. tomentosa*, described by ourselves, from that species to *R. hibernica*, with which it has no affinity.

The Supplement, to our thinking, fails to carry out its legitimate object, for, instead of bringing the original work up to date, on the lines adopted by its author, it seems more like an attempt to sit in judgment on Dr. Boswell and the rest of the British botanists, and at the same time to place the compiler's name as authority for the greatest possible number of species and varieties. The one statement which will be read with great satisfaction is, that the continuation of the work from the *Compositæ* onwards will be undertaken by Mr. Arthur Bennett, whose critical knowledge of our Flora is so well known to all British botanists.

H. & J. Groves.

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*The British Moss-Flora.* By R. Braithwaite, M.D., F.L.S. Part XIV. London: published by the Author. Pp. 40, 6 plates. Price 6s.

The appearance of this part of Dr. Braithwaite's great work has been anxiously looked for by all bryologists. It has been delayed, we much regret to learn, by the illness of the author. The genera dealt with are four—*Pohlia* (better known as *Webera*); *Epipterygium* (of which genus *Bryum Tozeri* Grev. is our British representative); *Plagiobryum* (better known as *Zieria*); and *Bryum* in part (25 of the 35 species). The difficulty of the subject made it desirable that someone of experience and authority should make his views public. This Dr. Braithwaite has done in masterly fashion. Pages 143 and 144 are an emended reprint of the last two of Part xiii., which they are intended to replace. In all 40 species are described, and accompanied by 33 illustrations. Students who use the second edition of Hobkirk's *Synopsis* will find several modifications of, and additions to, the arrangement adopted in that work. Thus *Pohlia cucullata* Bruch has been found in the West of Scotland; *P. gracilis* Lindb. in a sterile state on Ben Lomond; *Bryum fallax* Milde in Sussex and on Snowdon (the author suggests that it has been confounded with its ally, *B. pallens* Sw.); and *B. rubens* Mitt. in Sussex.

*Pohlia commutata* Lindb. has as synonyms *Webera commutata* Schimp., *Bryum Schimperi* Wils., and *B. catenulatum* Schimp., the latter being a stouter form. *Bryum rufum* Ferg. (erroneously-quoted as *B. fuscum*) is referred by Dr. Braithwaite to *B. purpurascens* Br. et Schimp. He says it "quite agrees with Norwegian specimens," but "is more stunted." *B. cernuum* Lindb. is the same as *B. uliginosum* Br. et Schimp., not *B. pendulum* Schimp. *B. affine* Lindb. is *B. bimum* var. *cuspidatum* Br. et Schimp., and has as its alpine variety *B. cirratum* Hornsch., which occurs on Ben Lawers. "*Bryum Barnesii* Schimp. appears to be only a starved form" of *B. argenteum* L. *B. Mildei* Juratz. is *B. apiculatum* of Wilson's *Bryologia Britannica*, and has lately been discovered in Guernsey. The rare *B. Muehlenbeckii* Br. et Schimp., of Devonshire, is recorded from Ben Nevis and Westmoreland.

A. G.

## *ARTICLES IN JOURNALS.*

*Annals of Botany* (July).—C. A. Barber, 'Nature and Development of Excrescences on Stems of *Zanthoxylum*' (2 plates). — E. Schunck & G. Brebner, 'Action of Aniline on green leaves and other parts of plants' (1 plate). — E. A. L. Batters, '*Schmitziella*, a new Genus of Endophytic Algæ (Corallinaceæ)' (1 plate).—J. R. Green, 'Occurrence of Vegetable Trypsin in fruit of *Cucumis utilissimus*.' — W. B. Hemsley, '*Chelonespermum* & *Cassidispermum*, proposed new genera of *Sapotaceæ*' (4 plates). — J. B. Farmer, 'Abnormal Flowers in *Oncidium splendidum*.' — Id., 'Occurrence of two prothallia in an ovule of *Pinus sylvestris*.'

*Bot. Centralblatt* (Nos. 27–9). — M. Britzelmayr, 'Das Genus *Cortinarius*.'

*Bot. Gazette* (June 15). — S. Watson, 'On Nomenclature.'— F. Stephani, 'North American Lejeuneæ' (*Micro-Lejeunea Cardoti*, *Eu-Lejeunea Underwoodii*, spp. nn.). — C. Robertson, 'Flowers and Insects.' — A. F. Foerste, 'Identification of trees in winter' (2 plates). — A. P. Morgan, 'Two new genera of Hyphomycetes' (*Cylindrocladium*, *Synthetospora*).

*Bot. Zeitung* (June 24–July 15).—W. Rothert, 'Ueber *Sclerotium hydrophilum*, einen sporenlosen Pilz.' — B. Stange, 'Beziehungen zwischen Substratconcentration, Turgor und Wachsthum bei einigen phanerogamen Pflanzen.'

*Flora* (June 18). — P. Hauptfleisch, 'Die Fruchtentwickelung der Gattungen *Chylocladia*, *Champia*, und *Lomentaria*.' — O. Loew, 'Ueber die physiologischen Functionem der Calcium- und Magnesium salze im Pflanzenorganismus.'— P. Klemm, 'Zur Erforschung der Aggregationsvorgänge in lebenden Pflanzenzellen.' — M. Möbius, 'Australische Süsswasseralgen.'

*Gardeners' Chronicle* (June 25).—*Eria Laucheana* Kränzl., sp. n. —(July 2). R. A. Rolfe, *Cymbidium Humblotii*, sp. n. — M. T. Masters, '*Tsuga Pattoniana*' (fig. 1). — (July 9). 'The Botanical Garden, Dublin.' — R. A. Rolfe, '*Oncidium Rolfeanum* Sanders, sp. n.'

*Journal de Botanique* (June 16). — P. van Tieghem, 'Sur la structure des Aquilariées.'—R. Chodat & G. Balicka-Iwanowska, 'La feuille des Iridées.'—(July 1, 16). A. Franchet, *Decaisnea Fargesii*, sp. n. — L. Mangin, 'Propriétés et réactions des Composées pectiques' (contd.).— —. Hue, 'Les Lichens de Canisy' (contd.).

*Journ. Linnean Soc.* (Bot. xxix. 201: June 29). — J. Miller, 'Lichenes Manipurensis a Dr. G. Watt lecti' (*Enterodictyon*, gen. nov.).—S. Le M. Moore, 'The True Nature of Callus' (1 plate).— Id., 'The alleged Existence of Protein in Walls of Vegetable Cells.' —F. Stephani, 'Colenso's New Zealand Hepaticæ' (3 plates).

*Nuovo Giornale Bot. Ital.* (July 4).—A. N. Berlese & V. Peglion, 'Micromiceti toscani' (2 plates). — U. Martelli & E. Tanfani, 'Le fanerogame e le protallogame raccolte durante la Riunione in

Napoli della Soc. bot. ital., 1891.'—J. Mueller, 'Lichenes Yatabeani in Japonia lecti.' — A. De Bonis, 'Le piante del Polesine.' — S. Sommier, 'Risultati botanici di un Viaggio all' Ob inferiore.'

*Oesterr. Bot. Zeitschrift* (July).—C. Baenitz, '*Cerastium arcticum* Lange, var. *Drivense*.' — K. Fritsche, 'Nomenclatorische Bemerkungen.' — R. v. Wettstein, 'Die Arten der Gattung *Gentiana*' (contd.).—J. Freyn, 'Plantæ novæ Orientales' (contd.: *Phæopappus Freynii* Sint., *Centaurea subcordata* Freyn & Sint., *C. psephelloides* Freyn & Sint., *C. Sintenisii* Freyn, *C. argyrocephala* Freyn & Sint., *Uechtritzia* (gen. nov.) *armena* Freyn & Sint., spp. nn.).

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## *BOOK-NOTES, NEWS, &c.*

The *Botanical Gazette* for June contains a short paper "On Nomenclature" by the late Dr. Sereno Watson, dictated by him in his last illness, and published at his request. His adhesion to the "practice of retaining the oldest name *under the genus*, no matter what older specific names there may be," was well known, and it was equally recognised that Dr. Asa Gray favoured the same principle. The article, however, is noteworthy for the following sentence:—"I must express surprise that Dr. Britton has not considered it his duty to publish the last written words of Dr. Gray which were addressed to him upon this subject, and which expressed his positive opinions upon this point." When, in the exercise of our editorial discretion, we withheld from publication a subsequently printed note of Dr. Britton on this subject, he did not scruple to say that this was because we were "apparently afraid of the argument therein contained." We shall await with interest Dr. Britton's statement of the reasons which have induced him to suppress the last utterances of America's greatest systematist.

The *Kew Bulletin* for May and June has at length been issued, and contains, as usual, not only "miscellaneous information," but some important botanical papers. Mr. Massee describes and figures the Vanilla Disease (*Calospora Vanillæ*). Mr. N. E. Brown has some useful "Notes on the Plants producing Paraguay Tea," in which he revises Miers's work, and enumerates the species employed: two of these, *Ilex amara* Bonpland and *I. acutangula* Nees (*I. paraguayensis* Hook. Bot. Mag. 3992), do not belong to the genus *Ilex*, but are referred respectively to *Symplocos lanceolata* A. DC. and *Elæodendron quadrangulatum* Reiss. No reference is made to Mr. Spencer Moore's recent collection of Maté plants in Brazil. There are two decades of new plants: one of Orchids, by Mr. Rolfe,—*Pleurothallis subulata*, *Restrepia ecuadorensis*, *R. Shuttleworthii*, *Dendrobium platycaulon*, *Bulbophyllum densiflorum*, *Eria cristata*, *Odontoglossum auriculatum*, *O. guttatum*, *Vanilla ensifolia*, *Spiranthes olivacea*,—and one of miscellaneous plants,—*Hansemannia oblonga* Hemsl., *Oxyanthus Monteiroæ* N. E. Br., *Pachypodium Saundersii* N. E. Br., *Hoya affinis* Hemsl., *Clerodendron congense* Baker,

*Eulophia dispersa* N. E. Br., *Pseudomacodes* (nov. gen. Orchid.) *Cominsii* Rolfe, *Amomum Ridleyi* Baker, *Æchmea Nichollsii* Baker, and a large-flowered variety of *Strophanthus Petersianus*. It appears that Mr. Brown is responsible for the publication of the *nomina nuda* in Mrs. Monteiro's *Delagoa Bay*, to which we referred at p. 126.

The Royal Agricultural Society has issued an excellent and complete set of coloured diagrams illustrating the life-history of the wheat plant. The first deals with the structure of the grain, the second with its germination; in the third is figured the young plant with the succession of leaves and roots; the next three describe the development and growth of ear and flower; the seventh shows the ripening of the grain; and the eighth and last the plant in flower and fruit, and also the structure of the straw. The diagrams are reproductions of original drawings by Francis Bauer, now in the Botanical Department at the British Museum. So accurate is the detail that we can hardly believe them to have been executed nearly a hundred years ago, when microscopy was in its infancy. The price of the set is 10s,; this includes an admirable explanatory pamphlet of twelve pages by Mr. Carruthers, who is also responsible for the arrangement and production of the diagrams. The information both as regards structure and physiology is well up to date, and the language, though thoroughly scientific, is sufficiently simple to be understood by the presumably intelligent farmer and senior country scholar. It is suggested that the notes "may be used as a text-book by the pupil," and for this purpose the pamphlet is sold separately. This is an excellent idea, but spoilt in the execution. The great value of the text lies in its clear explanatory nature; it is indeed the most concise account of the plant ever published, but its usefulness is seriously discounted by the absence of the illustrations. The Society might well have issued the paper, with the miniature reproductions of the plates which accompany it in the Journal, at the cost of a penny: at this price it could have been placed in the hands of every country schoolboy, from which much good would have resulted. Instead of this, they have chosen to issue, at the cost of threepence, the twelve pages of text, *without the plates*, which is something like publishing Euclid without the figures! With the blocks ready to hand, why in the name of common sense were they not used? The Royal Agricultural Society have done a good thing in issuing the large diagrams; they have just missed a second—the publication at a nominal price of one of the most useful little text-books imaginable.

Messrs. Bell & Sons have just re-issued Miss Plues's *Rambles in search of Wild Flowers*, bearing on its title-page the words, "Fourth edition, revised." This work first appeared in 1863. We have not been able to consult the original edition, but this "revised" issue positively bristles with errors of the most glaring kind, and the "ninety-six coloured figures" are the worst we have ever seen. No botanist who looks at the book will consider these remarks too strong. Messrs. Bell have been singularly unfortunate in their "reviser," but it would be difficult, if not impossible, to make the little volume of practical service to the field botanist.

We learn from *Nature* that Mr. Thomas Hanbury has presented to the Botanical Institute at Genoa the very rich collection of vascular plants made by the late Prof. Willkomm, of Prague. It comprises 14,472 species, the greater number being European, or from the adjacent districts of Asia and Africa. It is especially rich in plants of the Spanish Peninsula, and includes most of Willkomm's types.

Mr. John M. Coulter is making steady progress with his useful *Manual of the Phanerogams of Western Texas*, the first part of which we noticed at p. 287 of last year's Journal. The second instalment, issued June 2nd, contains the Gamopetalæ.

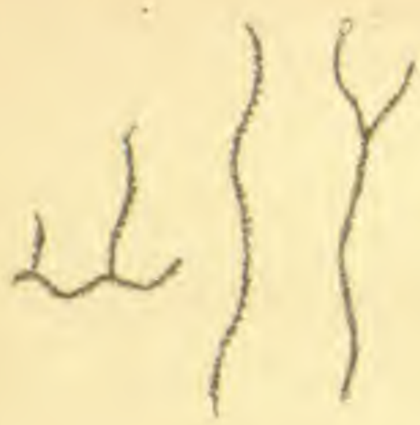
A third fascicle of the *Plantæ Postianæ* (Lausanne, Bridel: Feb. 1892) contains a considerable number of new species, mostly from the Lebanon and Anti-Lebanon ranges, and a plate of a genus of Composites—*Autrania* Winkler & Barbey.

The second part of Dr. Yatabe's *Iconographia Floræ Japonicæ* (Tokyo, Maruya) contains twenty plates, representing various natural orders, including a new Uredine,—*Triphragmium Cedrelæ*, described by Shōtarō Hori,—and a new genus of Gelidiaceous Algæ (*Acanthopeltis*) by Kintarō Okamura. The descriptions are printed in English as well as in Japanese—a boon for which the European botanist will be grateful.

The *Proceedings of the Biological Society of Washington* (vol. vii., July 7) contains an enumeration of the plants of the Pribilof Island, Bering Sea, by Dr. C. Hart Merriam, with critical notes by Mr. J. N. Rose.

The large moss-herbarium of the late George Davies, of Brighton, has recently been presented to the British Museum by his widow. It contains upwards of 20,000 specimens, in good preservation, of Mosses, Hepatics and Lichens, partly gathered by Mr. Davies in Great Britain and on the Continent, and partly communicated to him from N. Zealand, Samoa, India, the West Indies, and America.

Sir Edward Fry has reprinted from *Knowledge* a very readable essay on *British Mosses* as a little book of 71 pages (Witherby & Co.); it was originally delivered in the form of a lecture at the Royal Institution in January, 1891. After devoting some three dozen pages to the life-history, modes of reproduction, and structure of the Mosses, the author proceeds to the Sphagna, and points out their peculiar spongy structure and the remarkable physical effects which they have produced. We must refer our readers to the book itself for the highly instructive account of the perpetual struggle for supremacy between the ancient forests and peat bogs, the traces of which are seen in a succession of forest beds overlying one another in many parts of the country; and how lakes were filled up and dry land formed, and estuaries reclaimed, Sedgmoor in Somerset affording an example.



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W.H.P. del.
R.Morgan lith.

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West, Newman imp.

Marsupella (Cesia) conferta.

# A NEW BRITISH HEPATIC.

By W. H. Pearson.

(Plate 327.)

Marsupella (Cesia) conferta (Limpricht) Spruce. *Sarcoscyphus confertus* Limpricht, Jahrb. Schles. Ges. (1880), 313. *Gymnomitrium confertum* ejusd. Flora, n. 5 (1881). *Marsupella conferta* (Limpr.) Spruce, Rev. Bryol. n. 6, 95 (1881).—Autoicous, cespitose or straggling among mosses, pale yellowish green to reddish brown in colour. Stems simple or branched, prostrate, flexuose, filiform, terete, denudate at the base; branches short, ascending; about 10 cells in diameter; cortical cells with slightly firmer walls; radiculose; rootlets fasciculate, short, ascending to apex of the stem, few, more frequent below, dull white or reddish purple. Leaves closely imbricate, bifarious, from a vaginate base, appressed, erect, on fertile stems gradually accrescent, oval, bifid to about one-fifth; sinus and segments acute; texture firm; epidermis smooth; cells very minute to minute, roundish-quadrate or indistinctly 5–6-angled; walls thick; trigones large and distinct. ♀ terminal, on short branches or on main stem; bracts larger than the leaves, oval or ovali-rotund, the innermost bracts free (or sometimes united into a tube, R. S.), small, tender; margin irregular. Archegonia 5–10, dispersed over the calyptra. Pedicel long, thick. Capsule dark brown, almost spherical. Spores yellowish brown, granulate. Elaters 3–4-spiral, sometimes furcate. Andrœcia spicate, situated on the main stem or on short branches. ♂ bracts ovate, a little swollen at the base; antheridia solitary, stipitate.

Dimensions.—Stems from $\frac{1}{4}$ to 1 in. long, with leaves ·5 mm. broad; diam. of stem ·2 mm., leaves ·65 mm. × ·5 mm., segments ·125 mm., ·6 × ·45, seg. ·125, ·5 × ·4, seg. ·125, cells ·01 mm. ·015 mm. × ·01 mm., sub-bracts ·45 mm. × ·45 mm., ·5 mm. × ·45 mm., bracts ·75 mm. × ·45 mm., segments ·1 mm., ·65 × ·5, seg. ·1, ·65 × 5, seg. ·15, perigonial bract ·55 mm. × ·425 mm., seg. ·1 mm., antheridia ·125 mm. × ·075 mm.

Habitat.—Grows in depressed tufts, or straggling among mosses, on Ben Nevis, Scotland, at about 4000 ft., *Mr. W. West*, 12th Aug. 1880. Found also in alpine situations on the Continent.

Obs.—The British form differs from any of the continental specimens I have seen in its larger size, but, as it agrees in its autoicous inflorescence, ♂ and ♀ on the same plant, but on different branches, and in the shape and texture of the leaves, I have little doubt they are one and the same species. Herr Limpricht, the founder of the species, described it at first as a *Sarcoscyphus* (*Marsupella*), with a distinct perianth, but soon afterwards referred it to the genus, or, as Dr. Spruce maintains, subgenus, *Gymnomitrium* (*Cesia*). In carefully examining every stem sent me by Mr. West, I met with two fertile ones which appeared to have true perianths, but the specimens were weathered and too imperfect to rely upon; others, as figured, well represent

the subgenus *Cesia*, where there is no true perianth, and the innermost bracts are free. Distinguished from other species of the same genus by its autoicous inflorescence. Dr. Spruce found in original specimens from Herr Limpricht a fertile involucre which had a tubular perianth reduced to a short multilobate cup, confirming his contention as to the position of the supposed genus *Cesia*. The relative terms as to size of plant and leaf-cells are based upon the scales used by Dr. Spruce.

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Explanation of Plate 327.—Fig. 1. Plants, nat. size. 2. Portion of fertile stem × 24. 3—6. Leaves × 31, 7—9. Ditto × 24. 10. Leaf × 64. 11. Portion of leaf × 290. 12, 13. Sub-bracts × 64. 14, 15. Bracts with inner perichætium × 64. 16. Bract × 64. 17. Perigonial leaf × 64. 18. Antheridium × 85. (Ben Nevis, W. West).

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# FURTHER NOTES ON HIERACIA NEW TO BRITAIN.

By Frederick J. Hanbury, F.L.S.

(Continued from p. 202.)

**Hieracium hibernicum**, n. sp.—This species, discovered some years ago by Mr. H. C. Hart, is referred to by him under the name of *H. argenteum* Fr. in an interesting paper on Irish Hieracia which appeared on p. 48 of this Journal for 1886. A glance at the long note following this record will show how distinct this plant appeared to both Mr. Backhouse and Prof. Babington, who hesitated between describing it as "possibly new" and a "very remarkable" form of *H. argenteum*.

In 1889, Dr. Lindeberg erased the name *argenteum*, and wrote, "Capitula Hieracii Friesii, sed herba *longe alia*. Forma nova." Of the four localities mentioned by Mr. Hart, I have his specimens from Moynalt, near Lagley, Donegal, and from the Mourne Mountains, but cannot say whether the other localities he mentions refer to this or *H. argenteum* Fr. Last summer I had the opportunity of collecting, in very fine condition, specimens from the latter station under the guidance of Mr. S. A. Stewart, and was thus enabled to secure a full description and examples for figuring. Its general facies may be briefly described as *argenteum*-like, but with numerous stem-leaves, and slightly livid styles; it cannot, however, on careful examination, be referred to that species.

The stem ranges from about 12 to 22 in. in height, is reddish purple below, simple, and bearing from one to three heads. Radical leaves ovate-lanceolate, obtuse, and, unlike those of *H. argenteum*, disappearing as the plant reaches maturity. Stem-leaves numerous, 5–9, gradually diminishing upwards, almost glabrous above (though bearing a few short stiff hairs), and, excepting on the veins, glabrous also below; in texture, colour, and (frequently) recurved habit, as well as in general outline, acute points and sharp toothing, they closely resemble those of *H. argenteum*. The peduncles bear a few very narrow bracts. Involucres truncate, angular, and humpy.

Phyllaries all rather obtuse, floccose, and very sparingly clothed with setæ and short black-based hairs, the outer very small, rather lax, and extending into the peduncle. Ligules glabrous. Styles slightly livid on the under surface.

A plant collected by Dr. White in 1875, from Glen Tilt, Perth, may, I think, be referred to this species; but the only specimen I have is immature, and not well dried. A further search therefore in this locality should be made. Specimens sent to the Botanical Exchange Club by Mr. T. A. Cotton, who collected them last autumn in Upper Wharfedale, Yorks, are perhaps best placed to a form of this species, despite their almost glabrous involucre and weaker habit. While calling attention to these probable British localities, it is to the Irish specimens from Down and Donegal that I give the name, and from which both the description and drawing have been taken.

H. MURORUM L. pt., var. PULCHERRIMUM, n. var. — A singularly beautiful variety, first collected and pointed out to me by Miss Thompson, with whom I subsequently gathered it at Catterick Force, near Settle. Here, on the inaccessible rocks of the deep gorge, and constantly moistened by the spray rising from the waterfall below, grows a fine colony of it, whence a good series was secured for drying and figuring. My next acquaintance with the plant was made on the Carnarvonshire Hills, prior to my visit to which Mr. J. E. Griffith asked me to carefully observe a very beautiful form of *H. murorum*, which was scarce, and grew on ledges at a good elevation. With the Rev. Augustin Ley, I found it on the Carnedd Dafydd Cliffs, near Bethesda. Though the specimens were fine, they were by no means abundant, and in all probability we failed in finding its head-quarters in the district. Whilst united to the more ordinary forms of *H. murorum* in average size and general arrangement of the foliage and inflorescence, it is conspicuous by its beautiful close panicle of deep golden-yellow flowers, very black velvety setose involucre, slender almost straight peduncles, and markedly pilose-tipped ligules. The leaves, both radical and cauline, are lanceolate to ovate, more entire than in the type, and narrowed at the base into a shaggy petiole.

Before passing from *H. murorum*, I may here mention that the variety, *sarcophyllum* Stenstr., published as a subspecies under *H. silvaticum* (L.) Almq.,* has been found by Dr. White on the banks of the Tay, at Murthly Castle; by the Messrs. Linton at Black's Hope, Moffat, Dumfries; and by Miss Thompson, Mr. Whitwell and myself about Settle, and at the base of Ingleboro'; and by the Rev. H. E. Fox at Kirk Fell, Ennerdale. Another variety, *H. micracladium* Dahlst. (also published under *H. silvaticum*), has been found by Colonel J. S. Stirling in a corrie at the Head of Balglass,

* In Scandinavia many of the authors reverse the sense in which we use the names *H. murorum* and *H. sylvaticum*, though the sheet in the Linnean Herbarium clearly supports, I think, our view as to what plants Linnæus intended to be designated by the name *murorum;* but, like many questions of nomenclature, it is somewhat complicated, and for the purposes of this paper may be left for the moment.

near Denny, Stirling; by Mr. D. A. Boyd on subalpine rocks at Largs, Ayrshire; and by the Allt Dubh Ghalair, Glen Lochay, Perthshire, by myself. It is a pretty form, with very narrow leaves, intermediate between *H. murorum* and *H. duriceps*.

**H. duriceps,** n. sp. — A graceful and strongly marked species, apparently confined to Scotland. It is abundant on the miniature rocky cliffs of some of the burns of Sutherlandshire, where it was first observed in quantity by the Strath Bagaisteach, near Altnaharra, in the summer of 1888, by Mr. Melvill and myself. A still finer series was secured from the River Oykell in 1890, whilst collecting with Mr. Marshall, and in smaller quantity from the Traligill burn, near Inchnadamff. It also occurred sparingly near Kingshouse, Argyle; and Mr. Marshall gathered it last year from Ben Chaistel, near Tyndrum, and from Stob Garbh, W. Perth. Mr. Beeby has found it in Shetland, while specimens which I believe to be referable to this species were sent me by the Rev. W. R. Linton from Sneasdale, Uig, Skye.

This plant is usually from about 15 to 20 in. high, belongs to the *murorum* section, and is graceful and slender in all its parts. Stem wiry, reddish purple, and clothed with soft white hairs below, the main portion appearing glabrous to the naked eye, though bearing a few short hairs. The peduncles are remarkably straight and slender, giving a very rigid and angular appearance to the head of inflorescence; they are floccose, pilose, and setose, there being two sorts of setæ, very minute ones, which scarcely show above the stellate hairs, and much larger ones, such as occur on the peduncles of most Hieracia. The flowers are small and rather numerous; the involucre hard, compact, and, when mature, conical. Phyllaries narrow, acute, deep green, densely setose, and sparingly floccose and pilose. Ligules ciliated at the tips, especially when young. Styles livid. Radical leaves small, lanceolate, subacute; primary oval and apiculate, all more or less toothed, especially towards the base, and narrowed to a slender petiole; they are dull green, much blotched with purple when growing in an exposed situation, almost glabrous above, with scattered white hairs beneath. Stem-leaves narrow, of much the same form as the radical, petioled when occurring low down, sessile when springing from the point of branching. It maintains its very distinct and marked facies under cultivation. I sent it on two successive occasions to Dr. Lindeberg, who wrote, "Ab H. murorum diversum" and "Forma pulchra ab H. murorum distincta." All who have seen the plant concur in this opinion.

Having for several years past constantly spoken of this plant, among those helping me, as the "Small hard-headed Hawkweed," the Rev. W. R. Linton suggested the perpetuation in a latinised form of so characteristic an appellation.

**H. Breadalbanense,** n. sp. — This species, first gathered in 1888, appears to be very local, and, so far as my present knowledge goes, to be confined to the Breadalbane range proper. Like the last, it belongs to that almost endlessly variable section, the *Scapigera*, but possesses such marked characters and striking facies that

it may be recognised at a glance. Stem from 12 to 18 in. high, simple, or branched near the top, rather thick, slightly purpled below, otherwise green throughout, clothed below with simple white hairs and scattered stellate down, singularly devoid of setæ, bearing from three to nine heads. Peduncles rather thick and soft, almost straight, densely floccose, with few scattered white hairs; setæ almost, and sometimes quite, absent. Involucre rounded at the base, constricted above, dark green and hoary with white hairs and stellate down; setæ very few. Phyllaries rather broad and moderately acute. Ligules slightly pilose behind the tips. Styles pure yellow. The outer radical leaves oval, apiculate and almost entire; the inner ovate, more acute, and slightly toothed at the base; all abruptly narrowed to a short shaggy petiole; rather thick, yellowish grass-green above, paler beneath, and clothed on both surfaces with rough hairs, the whole forming a neat semi-prostrate rosette. There is always a large, shortly-stalked, acute and sharply-toothed stem-leaf, and sometimes a second one of a bract-like nature. Under cultivation the peduncles become almost white with floccose down, the radical leaves large and luxuriant, and the heads very numerous, but in other respects it maintains its very distinctive appearance. Its nearest ally is, perhaps, *H. Pictorum* Linton.

(To be continued.

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# PROPAGATION OF *RUMEX ACETOSELLA* L.

By Edward F. Linton, M.A.

This plant has a mode of reproducing itself which is not at all usual, and yet I do not remember to have seen any description of it, nor is it referred to as peculiar in any Flora that I have at hand. The roots form the best character for distinguishing it from the only similar British species, and yet in five British or European Floras I have looked into they are not mentioned; two others give "roots creeping"; and one (Hooker's *Students' Flora*) describes the root-stock as "creeping, much branched." This touches on the truth, yet gives no idea of the extensive ramifications of the rootstock, or of its proliferous capabilities. The rootstock is in fact a slender rhizome or underground stem, lying from $\frac{1}{2}$ in. to 2 in. beneath the soil, branching at irregular intervals, sometimes dichotomously, but more often laterally, and extending itself at the extremity of its main prolongation and branches with much rapidity. The measurement of a year's growth cannot be easily ascertained, as the rhizome is subperennial; but in light soil, where it is free to spread itself, two or three feet appears to be no uncommon development for a rhizome which has not lost power by bifurcation; and the year's growth seems to be accompanied by the production in the same year of numerous branches, all creeping horizontally, extending from a few inches to a couple of feet in length.

This development may be going on through a great part of the year, but it chiefly occurs in the summer and autumn, *after* the flowers have done their respective work of fertilising and seed-bearing. A plant now in ripe fruit, in the month of July, has the tips of its rhizome-branches showing fresh vigour, swelling slightly towards their acute greenish-white point, and leaving behind them, as they advance, a part clothed with fresh root-hairs. This new rhizome is very attenuate at first, scarcely thicker than a stout cotton thread; it is strong enough, however, to support a weight of 2 oz. or 3 oz., and in the lapse of time becomes tough and wiry, and is to a certain extent elastic. It increases, too, in thickness, like a tree-root, which it much resembles after a year or two, and may sometimes reach a diameter of $\frac{1}{4}$ in.

Now for the reproductiveness of the plant. From the horizontal rhizome numerous subsimple root-fibres descend, and from any of these nodes a sobole or underground shoot may start, which at once curves upwards, and on reaching the surface forms a fresh plant, which in its second year can throw up a flowering branch. These soboles are white, fleshy and brittle, and often thicker than the rhizome from which they spring; they become pink as they approach the surface, and develop a small rosette of leaves the first year. They are not produced usually with any regularity, but are crowded in places; I have counted as many as ten in the space of $1\frac{1}{8}$ in. of rhizome. Since any fragment of the rhizome may produce one or more fresh plants, and since several usually radiate in different directions from each centre and branch more or less freely, a single plant may become in the course of a year the parent of a very numerous family; and in poor, sandy soil, in which, because of its poverty, there is not much competition, a perfect network of tough rhizomes is found to occupy the surface of the ground where it is growing.

The character on which I have been dwelling is not a common one in the British Flora, at least to this extent. *Rumex Acetosella* spreads horizontally, and, when found ascending perpendicularly, it is due to a piece having been buried accidentally, or dug in for the purpose of destroying it; a depth of 2 ft. is supposed, perhaps rightly, to be fatal to it. In these points it differs from *Convolvulus arvensis*, which naturally comes up in a sinuous way, from a considerable depth, perpendicularly; its rootstock-branches scarcely spreading at all. *Cirsium arvense* is a better parallel, its rootstock advancing in horizontal sinuosities; but this does not branch freely, and its powers of reproduction are quite limited in comparison. Of other rhizomatous plants, some of the *Menthæ*, *Carices* and *Gramineæ* may be compared, and *Hydrocotyle vulgaris;* but I doubt if any British plant can be found to rival the *Rumex* n rhizomatous propagation, unless perhaps *Carex arenaria* is an nstance.

# MUSCI NOVI.

By C. H. Wright.

The following species, received at Kew from the various sources indicated, have proved to be new:—

**Philonotis penicellata** C. H. Wright, sp. n. — Ph. gracilenti Schpr. affinis, sed foliis brevioribus, *minus rigidis*, *margine apice solum serrata*.

Caulis gracilis, 3 cm. altus, rufescente tomentoso vestitus, apice fasciculatim ramosus. Folia angusta, subfalcata, imbricata, apice serrata, subtus papillosa, ad apicem nervosa; nervium subtus spinescens. Capsula subglobosa, *sulcata*, *inclinata*; seta 2 cm. longa; operculum depressum; peristomium duplex, exterius dentibus sedecem subulatis, læte aurantiacis, papillosis, interius segmentis sedecem 3–4-fidis basi conjunctis. Sporæ rugulosæ.

Hab. Ascension Island, 2870 pedes alt. Legit *H. J. Gordon*, No. 98.

Growing in tangled masses in boggy places.

**Philonotis gracilescens** Schpr. in Herb.—Ph. luteo-viridi Besch. affinis, sed robustior, foliis rigidioribus, curvatis marginibus serratis. Cæspitosa. Caulis erectus, 3 cm. altus, tomentosus, fasciculatim ramosus. Folia plus minusve falcata, vel lanceolata, rigida, papillosa, marginibus serratis, nervo excurrente. Capsula globosa, inclinata, leviter sulcata. Peristomium duplex, exterius dentibus sedecem transversim striatis subulatis, interius membranaceum in sedecem dentibus bifidis divisum.

Hab. Mauritius. Legit *Dr. Ayres*.

A graceful plant, with the habit of *P. penicellata*, from which it differs in having longer leaves with the whole of the margin serrate.

**Breutelia elegans** C. H. Wright, sp. n.—Folia dimorpha, inferiora ovato-acuminata, superiora lanceolata, nervo vix excurrente. Caulis robustus, plus minusve repens, fasciculatim ramosus, tomentosus, 7–15 cm. longus. Folia caulina late ovato-acuminata, erecto-patentia, marginibus supra leviter serratis, infra involutis, nervio paulo excurrente; folia ramulina lanceolata, marginibus serratis; cellulæ elongatæ, apice unipapilloso subtus; perichætialia ramulinis similia. Fructus terminalis; capsula inæqualis, subglobosa; seta 2·5 cm. longa; peristomium non visum.

Hab. Rio Janeiro, *Glaziou*, No. 17971.

Allied to *Bartramia* (*Breutelia*) *elongata* Mitt. and *B.* (*Breutelia*) *rupestris* Mitt., from both of which it differs in having dimorphic leaves, the lower much broader and less serrate than the upper. From *B. rupestris* it also differs in the nerve not being produced into a long pilum.

Bryum roseum var. brachycarpum C. H. Wright, var. nov. —Folia oblongo-acuminata, cellulis condensatis. Capsula breviter ovata, nec cylindrico-oblonga. Cætera ut in Bryo roseo, Schreb.

Hab. Banouli Forest, N.W. Himalayas, 5500 ft. alt. Legit *J. H. Lace*, No. 1077.

**Leucoloma decolor** C. H. Wright, sp. n.—Dense cæspitosum.

Caulis 7 cm. altus, nudus. Folia a basi breviter amplexicauli patentia subulata, apice capillari, flexuoso, serrato, 1 cm. longo. Cellulæ alares quadratæ, fulvæ; basilares elongatæ, poris connexæ; marginales angustissimæ, elongatæ, hyalinæ; reliquæ parvæ quadratæ crassæ marginatæ. Fructus ignotus.

Hab. Zanzibar. Legit *J. T. Last.*

**Holomitrium acutum** C. H. Wright, sp. n. — Folia longiora acutioraque quam in H. vaginato, Brid., apice solum serrata. Capsula cylindrica, brevis; seta elongata.

Cæspitosum. Caulis 1·5 cm. altus, rubido-tomentosis, innovationibus dichotomis ramosus. Folia lanceolata acuta, recurvata, apice serrata, sicca plus minusve crispata; cellulæ quadratæ, basilares elongatæ; nervo sub apice evanido. Perichætialia quam caulina duplo longiora, convoluta; cellulæ elongata nisi ad apicem; nervo excurrente. Vaginula ruberrima. Seta 1·5 cm. longa. Capsula cylindrica, erecta, 3 mm. longa. Peristomium infra ore capsulis ortans; simplex, dentes sedecem.

Hab. Dzomba, Zambesi, 6–7000 ft. Legit *Sir John Kirk.*

Allied to *H. Olfersianum*, which has serrate leaves, and a shorter seta and capsule.

**Endotrichum lanceolatum** C. H. Wright, sp. n.—E. plicato Dozy et Mlkb. affinis, sed foliis angustioribus, cellulis elongatis compositis, differt.

Rhizoma repens; rami erecti, 4 ad 5 cm. longi. Folia flavovirescentia, lanceolata, acuminata, margine sparse serrata; cellulæ vermiculares. Perichætialia quam caulina multo minora, ovata, acuta, membranacea. Capsula cylindrica, obscure fulva; seta brevis.

Hab. Trusan River, Borneo. Legit *G. D. Haviland.*

**Pterogonium decipiens** C. H. Wright, sp. n.—Caulis repens, irregulariter pinnatim ramosus; rami erecti, tenuissimi, 5 cm. alti. Folia imbricata, suborbicularia, acuminata, obscure binervia; cellulæ basilares marginalesque ovales, centrales apicalesque elongatæ. Folia perichætialia elongata, enervia. Seta gracilis, 1·5 cm. longa. Capsula inæqualis, inclinata, 0·2 cm. longa. Peristomium duplex, exterius dentibus sedecem subulatis, interiore dentibus sedecem interius dimidio coalitis.

Hab. Shiri Highlands, Zambesia. Legit *J. Buchanan*, No. 33.

A slender species, forming dense tufts, and much resembling in appearance a *Microthamnion*.

**Pterogonium abruptum** C. H. Wright, sp. n.—Folia abrupte acuminata, non serrata. Capsula duplo longiora quam lata.

Caulis repens, irregulariter pinnatim ramosus, rami erecti, 0·5–2 cm. alti, julacei, Folia dense imbricata, ovata, abrupte acuminata, marginibus integris; cellulæ alares ovales, reliquæ plus minusve elongatæ. Folia perichætialia anguste lanceolata, quam caulina duplo longiora, membranacea; cellulæ omnes elongatæ. Seta 1·5 cm. longa, spiraliter torta siccata. Capsula erecta, cylindrica; peristomium duplex, exterius dentibus sedecem transverse rugosis, interius membranaceus, cilia sedecem.

Hab. Shiri Highlands, Zambesia. Legit *J. Buchanan*, No. 32.

Growing in dense patches.

# SIMULA'S "FLORA EXOTICA."

By James Britten, F.L.S.

Since attention was directed (in the *Gardeners' Chronicle* for 1887, ii. 378, 444) to the very beautiful and unique collection of flower-drawings bearing the above title preserved in the Department of Botany of the British Museum, it has frequently been consulted by horticulturists. The work has also a botanical interest, and it may be worth while to publish an account of it in this Journal.

The following is a transcript of the inscription on the title-page, of which half is occupied by the coloured drawing referred to below, the whole being surrounded by an elaborate border.

"FLORA EXOTICA
QUÆ SUB
LÆTIS AUSPICIIS
ILLUSTRISSIMI AC EXCELLENTISSIMI DOMINI
DNI. JOHANNIS GEORGII S. R. IMPERII
COMITIS DE DERNATT. DYNASTÆ
HÆREDITARII IN SYRHAGEN, OVELGOÑE
ET MOHLENCAMP, SAC: CÆS: MAI: CAMERARII
DUCIS VERO REGENTIS HOLSATO GOTTORPIENSIS
CONSILIARII PROVINCIALIS DIGNISSIMI, ET PRÆ-
FECTI TRITOVIENSIS AC REINBECENSIS SUMI
*OLIM*
*In cultissimo Sierhagiensi Horto*
*felicissime adolevit*
*Jam vero*
*In chartulis istis pictoria arte ex*
*vivis suis coloribus repræsentata*
*EXCELLENTIÆ SUÆ*
*devotissimo animo*
*consecratur*
*A*
*JOHANNE GODOFREDO SIMULA. AŌ M.D.CC.XX.*"

A slip from a sale catalogue inserted at the beginning describes it as "A royal folio volume of 474 leaves (a few of which are blank), containing superb drawings of flowers, inscribed with their botanical names, one or more on a page, occasionally with insects or other accessories. The title is beautifully painted and embellished with a composition of allegorical figures, while the main contents of the volume exhibit the perfection of floral painting, and are doubtless not less faithful than artistic. The arms of the noble patron for whom the volume was executed appear on the title and on the massive silver clasps attached to the binding. This splendid volume has been in the Klevenfeldt Museum (of which it has the book-plate), and contains the autograph of Count Klevenfeldt." This

autograph is on the back of the title, and is appended to the following note, in the same hand:—"Dono excellentissimi generosissime Domini Lib: Baronis de Korst Sæ. Cæs. Russ. Majestatis Ablegati Extraordinari fautoris et amici indulgentissimi possideo."

The principal subjects depicted are—Hyacinths (35), Fritillarias (30), Narcissus (8), Iris (39), Polyanthus (40), Anemones (47), Tulips (54), Carnations (62), Lilies (8), Nigella (5), Oranges, &c. (9), Aloes (47), Mesembryanthemums (24), Cactus (11), Sedums (13), Stapelias (3), Euphorbias (10). In many cases there are more forms than one on a page, so that the whole number of figures is considerably over 500. Where all are so well executed, it is difficult to single out any for special praise; but the Tulips, Carnations, and Polyanthuses are exceptionally beautiful. Nearly all the varieties have French or German names attached. It appears from a note by the vendor, W. Boone, of New Bond Street, that the book was acquired by Robert Brown for the Department of Botany in 1854 for £25. It had previously been offered to Sir F. Madden for £65.

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# AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 235.)

Group 5. Egregii. — St. arcuate, arcuate-prostrate, or nearly prostrate, bearing subequal prickles chiefly on the angles, and *as a rule* (especially on its lower part) *some*, rarely many, *scattered stalked glands and acicles* or small prickles, but no series of intermediate acicles or prickles of all sizes, somewhat hairy or subglabrous. Pan. with some, rarely many, stalked glands. In this group there is a marked change in the usual direction of the fruiting sep. In groups 2–4 they are as a rule distinctly reflexed. But here (as in the 1st and the last three groups) the *tendency* is reversed; in our Egregii plants *R. Bamingii* (which I place provisionally as a var. under *R. mucronatus*) being the only one in which the fruiting sep. are distinctly reflexed, though they are sometimes partially so in *R. mucronatus* and *R. Anglosaxonicus*, and seem mostly so in *R. Boræanus* (ultimately). They are, however, reflexed in *R. egregius* and *R. Schlickumi* (which have been thought probably British), as in some of the other continental forms which Dr. Focke associates with them. The name Egregii, Prof. Babington proposes adopting from the Danes, to take the place of his Spectabiles, and answer to Dr. Focke's Adenophori. In his paper on Rubi just published in a German Flora, Dr. Focke speaks of his Adenophori as "a group composed of transition forms, . . . . not indeed a very natural one, but almost indispensable to a systematic *coup d'œil*," embracing the glanduliferous species which differ from the Radulæ "by the absence of a complete clothing of glandular bristles"; while they are mostly weaker than the Villicaules (Silvatici), in which stalked glands only occur exceptionally. This corresponds exactly

with what Prof. Babington has written more fully and so very clearly in p. 167 of his *British Rubi*. The stam. exceed the styles in our plants (I do not know how it may be in *R. melanoxylon*, but they do in the rest), except in *R. Boræanus* and *R. infestus*, where they about equal them.

A. Section *Petiolulati*. — Bas. lts. conspicuously stalked in summer.

a. Pan. typically without l. or foliaceous bracts above :—(43) *Boræanus ;* (44) *mucronatus ;* (46, b.) *Anglosaxonicus* var. *raduloides*.

b. Pan. with l. or foliaceous bracts to near the top :—(46) *Anglosaxonicus*, type and var. *setulosus ;* (47) *infestus*.

[I know too little of (45) *melanoxylon* to attempt placing it in a. or b. (44, b.) *Bannigii* appears to belong to b.]

B. Section *Subcorylifolii*. — Bas. lts. very shortly stalked in summer, the stalks lengthening a little in the autumn. Growth low ; habit of the Corylifolii :—(48) *Borreri ;* (49) *Drejeri*.

A. *Petiolulati*.—Bas. lts. conspicuously stalked in summer.

43. R. Boræanus Genev. *Essai Mon*. pp. 154–156.—*St*. bluntly angular, striate, with many scattered stellate hairs, and rather many shortly-stalked glands, *not felted*. *Prkl. unequal ;* the largest confined to the angles, declining or slightly falcate from much dilated compressed base ; the rest scattered and mostly small, with large cushion-like bases. L. 5-nate-pedate and 3-nate. Lts. at first rugose and rather hairy above, closely ashy-felted beneath and with many very short shining white hairs, especially on the prominent nerves and midribs, wavy at the edge with compound mucronate teeth ; term. rather long-stalked, broadly obovate-acuminate, or slightly cuspidate-acuminate, with entire or emarginate base. *Pan. rather short, very lax below*, with branches mostly 3-flowered, the 2 or 3 axillary ones distant, erect or suberect, having their central fl. long-stalked ; *leafless and subcylindrical above ;* the topmost fl. shortly stalked ; *the rachis* grey, with dense felt and villous hairs, *often almost unarmed above ; the prickles always few, slender, and strongly declining*, passing into acicles, with a few shortly-stalked glands. *Sep*. ovate-acuminate, *patent or subpatent when the pet. fall*, but apparently mostly reflexed in fr. Pet. and styles red. Stam. white or red, barely equalling or falling short of the styles. Plymouth neighbourhood ; locally common. Exactly the plant so abundantly represented in the Genevier Herbarium, Cambridge.

When dry, looking a good deal like *R. leucostachys*, though differing from it considerably in the nearly unarmed pan. with few suberect lower branches, as well as in the armature and clothing of the st.

44. R. mucronatus Blox. — St. arcuate-prostrate, subterete (often angular in S. Engl.), with some patent hairs, usually a few small acicles, and still fewer shortly-stalked and subsessile glands. *Prickles slender*, patent or slightly declining, usually few. *L.* 5-nate-pedate and 3-nate, the 3-nate gibbous below or deeply cleft,

bristles and stalked glands, and many long prickles. Sep. patent after flowering. Fl. pink."

This name has been given on the best authority to what appear to me such very different British plants that I have thought it best not to attempt a description of my own. So I give instead the above translation (for which I am indebted to the Rev. E. S. Marshall) of the one lately published by Dr. Focke in a German Flora. I have hardly materials for forming an opinion as to which of our northern plants (Derb., Staffs., Yorks.) this description best fits. The Dors. and Hants bramble described under this name in *Journ. Bot.* 1887, 21, is that which Focke has now named *melanodermis* for us (*Journ. Bot.* 1890, 133).

46. R. Anglosaxonicus Gelert, *Journ. Bot.* 1890, 132 & 166.—*St. subglabrous*, angular and often sulcate, *with many scattered short stout-based acicles* and very few shortly-stalked glands, dark purple. Prickles strong, subequal, declining from large dilated compressed base, almost wholly confined to angles. *L. often very large*, mostly 5-nate-pedate. *Lts. thick and coriaceous*, grey- or greenish-felted beneath, coarsely and somewhat doubly dentate-serrate; *term. regularly oval or elliptic*, with rather short point and emarginate base; interm. very similar, and often nearly as large. *Pan.* usually rather short and broad, *with strongly ascending few-flowered branches*, and several simple floral l. above; ped. felted, and with rachis *very glandular and aciculate*. Sep. subpatent after pet. fall, often becoming loosely reflexed later. Pet. pinkish or white. Hedges, &c.

An exceedingly well-marked plant as here described, and as pretty widely distributed in Engl.; but there seem several varieties, of which the two following at least are locally abundant, and remarkably constant in character.

b. *raduloides*.—*Prickles more numerous and more unequal*, especially on pan. *Lts. with sharper and more compound serrations; term. obovate or ovate*, unequal-sided. *Pan. with long cylindrical ultra-axillary top.* Whole plant far more prickly and aciculate, though not more glandular. Woods, &c. (Radn., Heref., Glost., Somers., Dors.). Babington and Focke agree with me in referring this to *R. Anglosaxonicus*; but they are not responsible for giving it varietal rank and name.

c. *setulosus*.—*Considerably more prickly* than var. b., hairier *and far more glandular*, especially in st., which is bright red. *Prickles* rather more scattered and unequal, *the largest with remarkably compressed bases, and not unfrequently falcate.* *Lts. conspicuously obtusangular, obovate*, tapering rather gradually to the shortly acuminate point, and narrowing considerably to the base. Pan. laxer below, with more numerous and (at the top) narrower floral l. Sep. very aciculate and purple, with stalked glands. Heref. (the "*R. Koehleri* var. *infestus* Bab." of *Fl. Heref.* p. 100). I am indebted to Dr. Focke for the suggestion that this plant should come here as "a very glandular and prickly var." In armature it certainly approaches the Koehleriani.

47. R. infestus Weihe (non Bab.). — St. long, rather high-arching, subglabrous, usually with a good many scattered broad-

based short prickles, and some acicles and stalked glands in the lower part; *the large prickles* subequal, nearly confined to angles, *strongly declining or even deflexed, and some falcate*, with long points from much-dilated and compressed base. L. 5-nate-pedate or digitate, concave. *Lts. unevenly mucronate-serrate* (the upper teeth coarse and occasionally almost lobate, but sharp-pointed), bright green and with scattered hairs above, much paler beneath, and even thinly felted when young; *term.* variable, but usually broadest a little above the middle, *strongly acuminate*, cordate or subcordate; interm. large, often gibbous below; bas. very shortly stalked; *petioles, petiolules and midribs strongly armed with recurved prickles. Pan. with erect-patent pseudo-umbellate branches below;* the ult raaxillary part rather broad, sometimes with dense interlacing branches exceeding the floral l.; *the rachis* moderately hairy and glandular, *very strongly armed like the st.;* the ped. with numerous acicles and slender prickles. *Sep.* usually prickly at base, *grey-green, with narrow white margin, patent after pet. fall.* Pet. rather small, obovate or elliptic, pinkish. Stam. and styles about equal, sometimes reddening below. Hedges and bushy places (York, Derb., Surr., and ? Dev.).

When seen at a little distance, recalling *R. plicatus* and *R. erythrinus* in habit and colouring. I have a specimen of Bloxam's, labelled "*R. infestus* W. & N. Near Coventry," which appears to me to be this plant.

In this Group and Section come also *R. chlorothyrsos* Focke, *R. egregius* Focke, and *R. Schlickumi* Wirtg., which have been doubtfully reckoned, and may yet prove to be British (v. *Journ. Bot.* 1886, 222, 228, 230, 233, and *B. E. C. Rep.* 1888, 212). All these three Dr. Focke *numbers* as good bramble "species." *R. egregius* seems (both from his descriptions and specimens) to be near *R. mucronatus;* but it has weak declining prickles, a pan. longer and narrower above, with greyer and less glandular rachis, mostly 3-nate l. felted beneath *when young*, and lts. rather cuspidate-acuminate than mucronate, and narrowing considerably to their base. The prickles of *R. Schlickumi* are apparently much stronger, its l. 3-nate or 5-nate-pedate and white-felted beneath, and lts. long-pointed and somewhat biserrate, its pan. leafless above, and pet. long and pink. Wirtgen's specimens at Cambridge have also a remarkably purplish st. and pan.-rachis. Both species have their sep. reflexed in fl. and fr. *R. chlorothyrsos* is more glandular and aciculate than either of these. It also has very strong prickles. In other respects it is near *R. silvaticus* W. & N. L. green on both sides. Pan. long, narrow, lax, often (and especially in shade) leafy to the top with many simple l. Sep. patent in young fr. Stam. scarcely equalling styles.

B. *Subcorylifolii.*—Bas. lts. very shortly stalked in summer, the stalks lengthening a little in the autumn. Growth low; habit of the CORYLIFOLII.

48. R. BORRERI Bell-Salt. *Annals Nat. Hist.* vol: xv. 306.—*St. almost prostrate*, bluntly angular, striate, hairy, *with many acicles*

*and stalked glands* (but so small as to be inconspicuous) *on the lower part. Prickles very crowded*, unequal and scattered, though placed chiefly on the angles, and there more nearly equal, rather slender, chiefly falcate, with some declining ones intermixed, from compressed base. L. 5-nate-pedate or digitate. *Lts. subcoriaceous*, dull or yellowish green above, much paler, *soft with shining short hairs, and not unfrequently ashy-felted beneath*, with wavy compound and at times almost lobate-serrate edges, *the teeth being crowded, long, acutely pointed, and occasionally patent or recurved; term. obovate cuspidate-acuminate*, considerably narrowed to the rounded nearly entire base; interm. obovate, unequal-sided, often gibbous below; bas. very shortly stalked; petioles, petiolules and (to some extent) midribs strongly armed with hooked prickles. *Pan. with broad rounded ultra-axillary top* composed of few-flowered patent or divaricate branches, sessile or shortly-stalked term. fl., and usually 1–3 floral l.; the two or three axillary branches being few-flowered, distant and ascending, usually exceeded by the 3-nate l., and when lengthened becoming remarkably erect, so preserving the cylindrical outline of the pan.; the rachis densely hairy and felted above, with many slender prickles (like those on st.) and unequal stalked glands mostly exceeded by the long patent hairs. Sep. felted, aciculate and glandular, patent or clasping fr. *Pet. rather large*, obovate, clawed, white or pinkish. *Stam.* white, *exceeding* greenish *styles*. Commons and hedges; locally abundant in S. Engl. (Wight, Dors., Somers., Glost.). A very early flowerer.

The above description, drawn mainly from fresh Dors. plants, agrees exactly with Salter's beautiful specimens (Wight) in the Borrer Herbarium at Kew. It seems a well-marked bramble, distinct from all *Sprengelii* forms, and best placed in this group.

49. R. Drejeri G. Jensen, *Flor. Dan.* 3023 (1883).—*St.* angular, *of a pale yellowish brown, and looking almost as if varnished*, usually with rather few scattered hairs; sometimes nearly as much armed as in the Koehleriani, at other times (especially in shade) hardly more than in ordinary *R. mucronatus;* stalked glands usually few, and, like the more numerous acicles, unequally scattered; the larger prickles (chiefly on the angles) strong, declining or deflexed from long compressed base. L. usually large, 5-nate-pedate. *Lts.* subglabrous above, paler, with very short hairs beneath, felted when young and on pan., *sharply and almost simply serrate; term. subrotund-ovate acuminate, with remarkably rounded even outline*, subcordate or round-based; petioles and petiolules strongly armed and coloured like st. *Pan. chiefly ultra-axillary, narrowing to the top*, and sometimes simply racemose above; rachis hairy, very glandular, with many rather weak declining prickles. Sep. narrow, acuminate, greenish-felted, aciculate and glandular, mostly patent or clasping in fr. *Pet. obovate attenuate.* Stam. far exceeding styles. Woods and bushy places (Heref., Wilts, Dev., Cornw., &c.).

When not growing in deep shade, a well-marked plant, from its light yellowish colour, the rounded formal outline of its acuminate lts., and the decreasing ultra-axillary pan. I follow Dr. Focke in putting it into this section. He considers it allied to *R. fusco-ater*.

*R. Purchasii* Blox., which Prof. Babington was disposed to place under *R. Drejeri*, is now, after cultivation by the Rev. W. H. Purchas, considered to be only a state of *R. mucronatus*, to which *R. Drejeri*, when weak and shade-grown, also makes some approach.

Dr. Focke has somewhat doubtfully referred to another plant in this section, his *R. hypomalacus* (*Synops. R. G.* 274), an interesting bramble growing in some quantity near Milford, Surrey, and also a Norfolk plant of the Rev. E. F. Linton's. He considers *R. hypomalacus* "intermediate between *R. plicatus* and *R. vestitus*." The Surrey plant, however, when growing, looked to me just intermediate between *R. villicaulis* and *R. corylifolius*, with the large roundish contiguous pet. and the pan. of the latter, and the angular arching st. and strong prickles of the former.

(To be continued.)

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## *SPIRANTHES ROMANZOFFIANA* IN THE NORTH OF IRELAND.

By R. Lloyd Praeger, B.A., M.R.I.A.

On the 7th of August last, while engaged on the field-work necessary for a paper which I am preparing for the *Irish Naturalist* on the flora of Co. Armagh, I was crossing an old wet worked-out bog in the northern portion of the county, when I found a single specimen of an orchid that was entirely new to me, and, though unable to name it offhand, I knew that it must be of a species unrecorded from the North of Ireland. An hour's search for further specimens proved fruitless, and I came away with a single root. A glance at the text-books showed me that my plant could be no other than the extremely rare *Spiranthes Romanzoffiana* (*S. gemmipara* of Lindley), whose only previously known station in Europe is Bantry Bay, Co. Cork. This determination has now been confirmed by my friend Mr. S. A. Stewart, and by Mr. Arthur Bennett. Three days later I revisited the locality, and a search of a couple of hours resulted in the discovery of a dozen good examples, in full bloom, one of which I forward herewith for the Herbarium of the British Museum.

The spot where *S. Romanzoffiana* grows is, as I have said, an old dug-out portion of a peat-bog. The bog is of considerable extent, but, so far as my observations have gone, the plant is confined to an area of a few acres. The ground is hard, wet peat, dotted over with the stumps of the ancient forest that underlies most of our peat-bogs, and intersected with a network of drains and pools. The original level of the ground has been at least six feet higher, but it is evidently many years since; owing to the water-level being reached, the turf-cutters were compelled to seek their fuel elsewhere. *Carex flava* and *C. Goodenowii* are the commonest plants on this area, while a number of plants which are rare locally, such as *Drosera anglica*, *Radiola linoides*, *Leontodon hirtus*, *Thalictrum flavum*,

*Sparganium minimum*, *Potamogeton obtusifolius*, and a profusion of *Osmunda regalis*, flourish on the bog or in the pools around.

The following notes, made from an examination of a dozen growing specimens, may be of interest, as it is seldom that European botanists have an opportunity of studying this species in a fresh state. The stems in the Armagh plant are 4–9 in. high, somewhat thin and stiff, smooth and shining. Leaves generally five in number, the lowest two or three at or near the base of the stem, 3–6 in. long, arching, clasping at the base; they are $\frac{3}{16}$–$\frac{5}{16}$ in. broad, but are rolled in so as to form a tube of less than half that breadth, or a deep channel; and they generally fall a little short of the base of the spike. The three upper leaves are short, and bract-like in shape, colour, and texture, being of a paler green, and less opaque; their lower half forms a closed tube around the flower-stem, dilating upwards till it is of about twice the diameter of the latter; the upper half lanceolate, erect. The spike is dense, 1–2½ in. long; the flowers are in three vertical rows of from four to eight blossoms each, each flower being twisted to the left through an angle of about 90°, the bract sheathing the right-hand side of the ovary. The flowers are slightly greenish white, and look greener at a short distance, owing to the conspicuous bracts; they are highly fragrant, and emit a delicious perfume resembling heliotrope; two or three specimens soon scented a fair-sized room. The root, in the specimens I examined (I took care to leave the root in almost all cases), consisted of three cylindrical tubers about 2 in. long. As regards the time of flowering, all the specimens collected on 10th August were in full blossom. In one or two cases the uppermost flowers were not yet expanded, and in a few others the lowest blossoms were withered.

These notes offer some points of difference from those already published of the Irish plant. The best figures and descriptions to which I have had access are those of Prof. Babington in *Trans. Linn. Soc.* xix. 632 (1844), and of the third edition of *English Botany*, t. 974, the figure in the latter work being copied from *Bot. Mag.* t. 5277. A glance at these shows that the Armagh plant (as represented by twelve specimens) differs from both in its longer, narrower root-leaves with inrolled margins, and in its shorter, denser, untwisted spike. The following table will show the differences as regards dimensions:—

| | Babington. | | Eng. Bot. | | Armagh Plant. | |
|---|---|---|---|---|---|---|
| | Fig. | Desc. | Fig. | Desc. | Limits. | Average. |
| | In. | In. | In. | In. | In. | In. |
| Stem . . . . . | 6½ | 5–6 | 7½ | 5–15 (A. Gray) | 4–9 | 7 |
| Spike . . . . . | 3 | 1–1½ | … | 1–4 (A. Gray) | 1–2½ | 1½ |
| Lower leaves, length | 2¼ | 2–3 | 4 | 3–4 | 3–6 | 5 |
| ,, breadth | ½ | … | ½ | … | $\frac{3}{16}$–$\frac{5}{16}$ | ¼ |

The margins of the leaves in my plant are invariably much inrolled, and the spike shows a slight twisting only at the top,

when the flowers are not fully expanded. The flowers themselves appear to correspond in all particulars to the printed descriptions. Whether the differences above detailed are of any importance, I leave it to critical botanists to say.

The finding of *S. Romanzoffiana* in the North of Ireland, while of interest to continental as well as British botanists, is of especial importance to local observers, for I see no reason why further search should not lead to its discovery at other stations, perhaps the most likely ground being the extensive bogs that fringe the southern and south-western shores of Lough Neagh, and the marshes on the banks of the Upper Bann. The fact of its habitat being on a worked-out bog shows that, although it may have flourished in its present station for many years, its original home was probably elsewhere in the neighbourhood.

[The identity of Lindley's *S. gemmipara* with *S. Romanzoffiana* of Chamisso (*Linnæa*, iii. 32 (1828), which was at one time disputed, was accepted by Prof. H. G. Reichenbach and Asa Gray (see Report of Botanical Congress held in London in 1886, p. 176), and may therefore be considered as established. The spelling of the latter name is that of the founder of the species. The Rev. T. Allin (*Flowering Plants of Co. Cork*, p. 77) records it from two stations in addition to the well-known one at Berehaven:—"In 1873 I discovered [it] in a new station, east of Dunmanway, about thirty plants in a damp glen. Mr. C. Longfield the next year found it in the neighbourhood of Desert."—Ed. Journ. Bot.]

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# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Continued from p. 216.)

**Spergula arvensis** L. Sp. Pl. 440 (1753). **1570.** "Saginæ Spergula, sive Spurry Belgarum et Anglorum."—Lob. Adv. 357. Near Rochester.—Johns. Kent, p. 2 (1629).

**Lepigonum rubrum** Fries, Fl. Hall. 76 (1818). **1632.** "Spergula flore rubro."—Johns. Kent, p. 28.

**L. marinum** Fries, Fl. Hall. 76 (1818). **1629.** "Spargula marina Daleschamp."—Johns. Kent, p. 4. I am unable at present to give information as to the records of the species into which this is now divided.

**Polycarpon tetraphyllum** L. Sp. Pl. ii. 131 (1762). **1778.** "Circa Lymston prope Exeter, in Devonia, et in Insula Portlandica."—Huds. ii. 60.

**Montia fontana** L. Sp. Pl. 87 (1753). **1663.** "About Gamlingay" (Cambs).—R. C. C. App. i. 3.

**Elatine hexandra** DC. Ic. Pl. Rar. i. 14, t. 43 (1808). **1801.** "The Revd. Mr. [E.] Williams found it, flowering in August,

1798, about the eastern shore of Bomere Pool, near Condover, Shropshire."—E. B. 955.

**E. Hydropiper** L. Sp. Pl. 367 (1753). **1830.** "Detected by the writer of this [J. E. Bowman] in August last [1830] on the S.E. side of Llyn Coron, near Abberffraw, Anglesey."—E. B. Supp. 2670.

**Hypericum Androsæmum** L. Sp. Pl. 784 (1753). **1570.** "Angliæ sylvis, lucis, et nemoribus, præsertim Bristoiæ et Glocestriæ conterminis."—Lob. Adv. 280.

**H. perforatum** L. Sp. Pl. 785 (1753). **1538.** "Hypericon .... nonnulli herbam perforatum [appellant], vulgus appellat Saynt Johns gyrs."—Turn. Lib.

**H. dubium** Leers, Fl. Herb. 165 (1775). **1796.** "Discovered in July, 1794, by Dr. John Seward, of Worcester, growing plentifully about Sapey in that County."—E. B. 296.

**H. quadratum** Stokes, Bot. Mat. Med. iv. 99 (1812). **1548.** "I sawe it thys last yere in Syon parck" (Middx.).—Turn. Names, B iij.

**H. undulatum** Schousb. **1864.** Found 7th Aug. 1861, by Mr. T. R. Archer Briggs near Plymouth, Devon: but previously observed by Mr. James Cunnack and the Rev. W. Moyle Rogers. —See Journ. Bot. 1864, 46, 279; 1891, 98.

**H. humifusum** L. Sp. Pl. 785 (1753). **1632.** "Hipericum minus repens."—Johns. Kent, p. 29.

**H. linarifolium** Vahl. Symb. i. 65 (1790). **1840.** "Found by the Rev. Thomas Hincks, of Cork, among granite rocks near the banks of the Teign, Devon, in the summer of 1838."—Ann. N. H. ser. i. vi. 76.

**H. pulchrum** L. Sp. Pl. 786 (1753). **1632.** Johns. Kent, p. 33. "In S. Johns Wood and other places."—Ger. em. 540 (1633).

**H. hirsutum** L. Sp. Pl. 786 (1753). **1570.** "In Anglia ... prope Bristoiam: In Vincentii præruptis & sylvosis trans flumen." —Lob. Adv. 173.

**H. montanum** L. Fl. Suec. ii. 266 (1755). **1640.** "About Bristow and Bath," &c.—Park. Theatr. 577.

**H. Elodes** L. Sp. Pl. ed. 2, 1106 (1762). **1633.** "Upon divers boggy grounds of this kingdome."—Ger. em. 542. "On a rotten moorish ground not farre from Southampton."—Johns. Merc. Bot. 21 (1634).

**Althæa officinalis** L. Sp. Pl. 686 (1753). **1551.** "Groweth naturally in watery & marrish myddoes and by water sydes."—Turn. i. [B viij]. "Very plentifully in the marshes, both on the Kentish & Essex shore alongst the riuer of Thames, about Woolwich, Erith, Greenehyth, Gravesend, Tilburie, Lee, Colchester, Harwich, and in most salt marshes about London."—Ger. 789 (1597).

**A. hirsuta** L. Sp. Pl. 687 (1753). **1798.** "In arvo prope Cobham in Cantiâ anno 1792 invenit J. Rayer habitationum stirpium clarissimus indagator."—Symons, Synopsis, 200.

**Lavatera arborea** L. Sp. Pl. 690 (1753). **1640.** "In an island called Dinnie, three miles from Kings Roade, and five miles from Bristow, as also about the cottages neere Hurst Castle, over against the Ile of Wight."—Park. Theatr. 306.

**Malva moschata** L. Sp. Pl. 690 (1753). **1597.** "By the ditch sides, on the left hand of the place of execution, called Tyborne . . . . and divers other places."—Ger. 786.

**M. sylvestris** L. Sp. Pl. 689 (1753). **1562.** "Groweth wilde about townes and hygh wayes."—Turn. ii. 45.

**M. rotundifolia** L. Sp. Pl. 688 (1753). **1597.** "Wilde dwarfe Mallow—among potherbes by high waies, and the borders of fieldes."—Ger. 786. Johns. Kent (1632), p. 30.

**Tilia platyphyllos** Scop. Fl. Carn. i. 373 (1772) (*T. grandifolia* Ehrh., 1787). **1666.** "At Whitstable in Surrey, and near Darkin" [Dorking].—Merr. Pinn. 118.

**T. cordata** Mill. Dict. ed. 8 (1768) (*T. parvifolia* Ehrh. 1787). **1562.** "Groweth very plentuously in Essekes in a parke within two mile from Colichester, in the possession of one maister Bogges."—Turn. ii. 153, back. "Neere Colchester, and in many places alongst the highway leading from London to Heningham, in the Countie of Essex."—Ger. 1299. Both Turner and Gerard seem to intend *T. vulgaris* by their description, but according to Ray (Hist. Pl. ii. 1694), were in error in so doing:—"Turnerum & Gerardum errâsse existimo cùm in Essexia Angliæ hoc genus copiosè provenire aiunt, nam quamvis ipse Essexiæ incola sum, neque inibi neque alibi in Anglia Tiliam fœminam vulgarem platyphyllon sponte nascentem vidi. Quæ frequens in sepibus & sylvis apud nos invenitur Tilia est minore folio J. B. & aliorum."

**Radiola linoides** Roth Tent. i. 71 (1788). **1632.** Johns. Kent, p. 31. "I found this in Kent on a Heath not farre from Chiste-hurst [Chislehurst] . . . in July, 1630."—Ger. em. 569 (1633).

**Linum catharticum** L. Sp. Pl. 281 (1753). **1629.** Johnson, Kent, p. 4. First observed by Goodyer in Hampshire and Essex. —See Ger. em. 559.

**L. perenne** L. Sp. Pl. 277 (1753). **1650.** "On Newmarket Heath [Cambs]. Mr. Sare."—How, Phyt. 69.

**L. angustifolium** Huds. Fl. Angl. ii. 134 (1778). **1562.** "I have seene flax . . . wilde in Sommerset shyre wythin a myle of Welles."—Turn. Herb. ii. 39 (back).

**Geranium sanguineum** L. Sp. Pl. 683 (1753). **1634.** "About S. Vincents rock nigh Bristow."—Johns. Merc. Bot. p. 38.

**G. sylvaticum** L. Sp. Pl. 681 (1753). **1670.** "In pratis montosis et dumetis agri Westmorlandici et Eboracensis copiose." —Ray, Cat. 131.

**G. pratense** L. Sp. Pl. 681 (1753). **1597.** "In barren places and in vallies."—Ger. 797.

**G. pyrenaicum** Burm. f. Diss. Ger. 27 (1759). **1762.** "Ad ripam fluvii inter Bingley et Kighley in agro Eboracensi; prope Enfield, et inter Hyde-Park et Little-Chelsea."—Huds. i. 265.

**G. molle** L. Sp. Pl. 682 (1753). **1597.** "Neere to common high waies, desert places, untilled grounds, and specially upon mud wals almost everie where."—Ger. 793.

**G. pusillum** L. Syst. ed. 10, 1144 (1759). **1660.** "On the hill of health" (Cambs).—Ray, Cat. Cant. 61.

**G. rotundifolium** L. Sp. Pl. 683 (1753). **1762.** "Circa Bath et Bristol copiose, inter Battersea et Wandsworth."—Huds. i. 265. But the plant was known to Buddle (c. 1712). See Fl. Middx. 68.

**G. dissectum** L. Fl. Suec. ed. 2, 242 (1755). **1632.** Johns. Kent, p. 18.

**G. columbinum** L. Sp. Pl. 682 (1753). **1666.** "In several places of Hampshire. Mr. Goodyer."—Merrett, 45.

**G. Robertianum** L. Sp. Pl. 681 (1753). **1548.** "The herbe called in englishe herbe Roberte."—Turn. Names, G iij. Between Hampstead Heath and Kentish Town.—Johns. Eric. (1629).

**Erodium cicutarium** L'Herit. in Ait. Hort. Kew. ed. 1, ii. 414 (1789). **1597.** "This wilde kinde of musked Cranes bill, being altogether without savour or smell."—Ger. 800, fig. 3. "Pinke nedle or Cranes byl."—Turn. Names, and Herball.

**E. maritimum** L'Herit. in Ait. Hort. Kew. ed. 1, ii. 416 (1789). **1666.** "Over against Saint Vincents Rocks on the farther side of the River, and at Bass Castle in Cornwall," &c.—Merrett, 46.

**Oxalis Acetosella** L. Sp. Pl. 433 (1753). **1538.** "Oxys . . . vulgus vocat Alleluya, wodsore, & cuckowes meat."—Turn. Libellus "It groweth in woddes about tree rootes and amonge bushes."—Turn. Names, E viij, back.

**O. corniculata** L. Sp. Pl. 435 (1753). **1795.** "I am obliged to Mr. John Turner of Lympston, near Exeter, for a specimen of this plant, who found it in several places in the neighbourhood of that city, and who, I believe, first discovered it in these kingdoms."—Berkenhout, Synopsis, ii. 141.

**Impatiens Noli-tangere** L. Sp. Pl. 938 (1753). **1633.** "First found to grow in this kingdome by . . . . Mr. George Bowles . . . . first in Shropshire, on the banks of the river Kemlet at Marington in the parish of Cherberry."—Ger. em. 446.

**I. biflora** Walter, Fl. Carol. 219 (1788) (*I. fulva* Nutt.). **1835.** "On the river Wey, near Guildford, Surrey, 14th Aug. 1834. Mr. Borrer."—E. B. Suppl. 2794.

**Ilex Aquifolium** L. Sp. Pl. 125 (1753). **1538.** "An holy tre . . . e cuius corticibus ipse admodū puer viscū confeci."—Turn. Libellus (under *Ruscus*).

**Euonymus europæus** L. Sp. Pl. 197 (1753). **1548.** "I have sene it betwene Barkway and Ware in the hedges."—Turn. Names, D i.

**Rhamnus catharticus** L. Sp. Pl. 193 (1753). **1597.** "In Kent in sundrie places, as at Farningham, upon the conie burrowes."—Ger. 1154.

**R. Frangula** L. Sp. Pl. 193 (1753). **1597.** "I found great plētie of it in a wood a mile from Islington, in the way from thence toward a small village called Harnsey . . . . and in most woods in the parts about London."—Ger. 1286.

**Acer campestre** L. Sp. Pl. 1055 (1753). **1570.** "Prope Oxoniā oriri sponte nobis asseruerint."—Lob. Adv. 443.

**Genista anglica** L. Sp. Pl. 710 (1753). **1548.** "I have not sene it in England savying once besyde Coome parcke" [Surrey].—Turn. Names, H iij.

**G. pilosa** L. Sp. Pl. 710 (1753). **1775.** "Found by Sir John Cullum about Lackford, four or five miles from St. Edmund's Bury, in July, 1774."—Rose's Elements of Botany, App. 454. Sir J. Cullum found it at Icklingham in 1771: see Hind's Fl. Suffolk, 105.

**G. tinctoria** L. Sp. Pl. 710 (1753). **1570.** "Genistella infectoria—Angl. Dieweed . . . . Angliæ occiduæ."—Lob. Adv. 407.

**Ulex europæus** L. Sp. Pl. 741 (1753). **1570.** "In Anglia, ubi frequentissima in sterilibus et ericetis."—Lob. Adv. 409.

**U. Gallii** Planch. in Ann. Sc. Nat. 3rd S. xix. 207 (1849). **1849.** From Dorsetshire. Distinguished by Planchon in 1846.—Ann. Sc. Nat. 3rd S. xix. 203.

**U. nanus** T. F. Forster in Sym. Syn. 160 (1798), (including *U. Gallii*). **1641.** "Non procul a Castro South Sea Castle in Comitatu South-hampton."—Johns. Merc. Bot. pars alt. 21.

**Cytisus scoparius** Link, Enum. ii. 241 (1822). **1548.** "Groweth in al countriis of England where as I have ben."—Turn. Names, D ij, back.

**Ononis repens** L. Sp. Pl. 717 (1753) (*O. arvensis* E. B. Supp. 2659). **1548.** "Groweth in many places aboute Cambryge."—Turn. Names, B i.

**O. spinosa** L. Sp. Pl. 716 (1753). **1597.** "In our London pastures, and likewise in other places."—Ger. 1141.

**O. reclinata** L. Sp. Pl. ed 2, 1011 (1762). **1835.** Found in Aug. 1835, by Prof. Graham by the sea to the north of West Tarbert, near the Mull of Galloway (Co. Wigton).—Hook. Comp. Bot. Mag. i. 119. E. B. Supp. 2838.

**Trigonella purpurascens** Lam. Fl. Fr. ii. 590 (1778). **1690.** "Mr. Newton in our company found it . . . . at Tolesbury, in Essex."—Ray, Syn. i. 246.

**Medicago sylvestris** Fr. Mant. iii. 92 (1842). **1805.** Near Bury, Suffolk.—Sir T. G. Cullum in Bot. Guide, 561.

**M. falcata** L. Sp. Pl. 779 (1753). **1634.** "In montosis."—Johns. Merc. Bot. 74. "Between Linton and Bartlow," &c. (Cambs).—R. C. C. 167 (1660).

**M. lupulina** L. Sp. Pl. 779 (1753). **1629.** "Medica semine racemoso."—Johns. Kent, 1.

**M. denticulata** Willd. Sp. Pl. iii. 1414 (1800). **1670.** "At Orford in Suffolk."—Ray, Cat. 302. G. E. Smith in Pl. of S. Kent, 43 (1829), as *denticulata*.

**M. arabica** Huds. i. 288 (1762). *M. maculata* Sibth. Fl. Ox. 232 (1794). **1632.** Hampstead Heath.—Johns. Enum. 41.

**M. minima** Desr. ap. Lam. Dict. iii. 636 (1709). **1660.** "In an old gravell pit in the corn field near Wilborham church; also at Newmarket" (Cambs).—R. C. C. 166.

**Melilotus officinalis** Lam. Fl. Fr. ii. 594 (1778). **1597.** "No part of the world doth enjoy so great plenty thereof as England doth, and especially Essex."—Ger. 1034.

**M. alba** Desr. ap. Lam. Dict. iv. 63 (1797). **1830.** "Denes at Yarmouth. Corn fields at Aberlady Bay near Edinburgh. Mr. Lloyd."—Hook. Brit. Flora, 327.

**M. arvensis** Wallr. Sched. Crit. 391 (1822). **1848.** First

found at Thetford, Suffolk, by the Rev. W. W. Newbould, 28 July, 1848. Phyt. iii. 344, 540. E. B. Supp. 2960. See Journ. Bot. 1886, 162.

**Trifolium subterraneum** L. Sp. Pl. 778 (1753). **1634.** "T. pumilum supinum flosculis longis albis nondum descriptum. In montosis."—Johns. Merc. Bot. 73.

**T. pratense** L. Sp. Pl. 768 (1753). **1562.** "Groweth in myddoes somtyme wyth a whyte floure and somtymes wyth a purple."—Turn. ii. 158.

**T. medium** L. Am. Ac. iv. 105 (1759). **1660.** "Lately in an enclosed ground near the river Cam, not farre from Newnham, by the foot way to Grantcester" (Cambs).—R. C. C. 168.

**T. ochroleucon** Huds. Fl. Angl. i. 283 (1762). **1660.** "About Cherry-Hinton" (Cambs).—R. C. C. 168. This may be the plant figured in Turn. ii. 157, and referred to by him as the "trifoly or clover . . . . wyth a whyte floure."

**T. maritimum** Huds. Fl. Angl. i. 284 (1762). **1633.** "I first observed it in Dartford salt marish the tenth of June, 1633." —Johnson in Ger. em. 1208.

(To be continued.

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## *SHORT NOTES.*

Rediscovery of Rubus Chamæmorus in Ireland (pp. 217, 246). —Having been unfortunately unable to accompany Mr. Lloyd Praeger when he asked me to do so a couple of weeks ago, to seek for this missing Irish alpine, I was all the more willing to join my old friend Mr. R. M. Barrington, who wrote to me to the same effect at the beginning of August, and who has asked me to write this note. Neither Mr. Barrington nor I were aware of Mr. Praeger's unsuccessful search when we arranged to go. We started from Strabane on Wednesday, August 10th, strongly impelled to the search by our accurate friend Mr. A. G. More, who has always maintained that, although no specimen existed, so careful an observer as Admiral Jones could not have been mistaken, and that the plant would yet be found. Proceeding by car to Lough Ash, we made our way to the range of hills known as the Dart or Sperrin range; and after a search of some hours, I was fortunate enough to find the plant. Mr. Barrington had taken another line, but, attracted by my shouts of triumph, he at length rejoined me, and we rejoiced together at having rediscovered an alpine species of much interest in its only Irish locality, where it has been unsuccessfully sought for on various occasions since it was first observed 66 years ago. Subsequently another small patch of the plant was seen across the boundary line between Tyrone and Derry, thus locating it for the first time in District 12 of the *Cybele Hibernica*. *Rubus Chamæmorus* occurs here sparingly, I would be inclined to say very sparingly. It appeared to us to be very difficult to find, and that it would be the wisest course to pub-

lish no exact locality for fear of its extermination. In consequence of the apparently great decrease in quantity since it was described as "very abundant," I fear that natural causes have been at work in this direction. It is almost choked by Sphagnum and stunted ling. The plants are thinly scattered, and usually show a single minute leaf about half an inch in diameter, whose petiole barely brings it to the light. It is thus a very inconspicuous species as compared with the plant we were both familiar with in Scotland. No trace of either inflorescence or fructification was visible, and I believe it is impossible any can have occurred this season. In 1883 I searched these mountains less carefully, and I can only say I am not surprised that I was then unsuccessful. The only other alpine in the immediate neighbourhood is *Carex rigida*, which I have already recorded from the range (*Proc. R. I. A.*, 2nd ser., vol. iv. No. 3).—H. C. Hart.

Note on Orobanche.—I am induced to publish this note, as in lately dissecting my specimens of the genus I have determined two species new to our Flora. Although unfortunately it is too late to attempt to gather specimens this year, and dried plants are almost useless to figure from; yet I should be glad to see any specimens gathered this autumn, and would suggest that a careful search round our rocky coasts next June and July may result in some discoveries. But the plants must be in a fresh state for easy discrimination. A possible third new species to our list is from the Lizard cliffs, Cornwall; at first sight it resembles *O. rubra*, but the flowers are longer, more spreading, and crimped and wavy at the lips. The plant named by Dr. Boswell as requiring to be again gathered, the supposed *O. lucorum* (Koch) A. Braun (ap. Schultz in *Annal. d. Gewächsk.*, v. p. 504, Regensburg, 1830; *Phytologist*, ii. 640 (1846), I gathered in the original station, and sent fresh examples to Dr. Boswell, and his answer was "certainly *O. elatior*." In vol. iii. of the *Phytologist*, p. 603 (1849), footnote, Dr. Bromfield remarks that he has never seen "any of these singular parasites visibly connected with a large and healthy specimen of the species of plant to which they severally attach themselves, but have always found their victim a poor, stunted, flowerless thing, sometimes hardly discernible above ground." This is by no means my own experience. I have seen dozens of specimens in Kent *attached* to young, well-grown plants of *Rubus*, *Galium*, *Picris*, *Ononis*, &c. Certainly this was in June and July, and the Orobanches were only partially in full flower; later on it may be different: the only exception I remember was a few specimens of *Daucus* on the Kentish coast, but they were in an extremely dry situation. I refer entirely to wild plants; I am, of course, aware of much injury being done to clover fields by Orobanches, and have once or twice seen the parasites almost as numerous as the clover itself.—Arthur Bennett.

New Wilts Plants.—Mr. Arthur Bennett has kindly verified the following which I have found:—*Rhynchospora fusca*, 5, Landford; *Carex curta*, 10, Whaddon; *Lycopodium inundatum*, 5, Landford.—Edward J. Tatum.

New Carmarthenshire Plants.—During an excursion with the Cambrian Archæological Association in Carmarthenshire on Aug. 10th, I found the following species, which I believe are new records for that county:—*Elatine hexandra*, Talley Lakes; *Rubus gymnostachys* Génév. (*R. macrothyrsus* J. Lange), near Pant y Lyn quarries; *Hieracium diaphanoides*, walls near Dynevor Castle; *H. stenolepis* Lindeb., walls, Carregcennen Castle; *H. gothicum* Fr., rocks near Cwrt Bryn y Beird; *Lastrea Thelypteris*, between the two Talley Lakes.—J. E. Griffith.

Viburnum Lantana in Lincolnshire.—I send you specimen of *Viburnum Lantana* from a shrub found (apparently quite wild) at the Springs, Rothwell House, near Caistor, N. Lincolnshire, by Mr. B. B. Le Tall. This is a new county record.—J. Burtt Davy.

Stachys Betonica in Co. Donegal.—Many years ago I recorded this species from Dunleary, in this county. Recently, however, on examining my specimens, I felt doubtful as to the correctness of my identification, and on sending them to Mr. Bennett he stated that they were some hybrid of *palustris*, distinct from *ambiguum*. I will procure fresh specimens before long, and give them a fresh examination; but the Flora of this county was thus deprived of *Stachys Betonica*. I have now, however, to record the plant with certainty. A lady of Londonderry, Mrs. Leebody, wrote to inform me that it grew at Lough Fern, near Milford. On enquiry she kindly directed me to the locality, and in the last week of July I visited the spot, and soon found a patch of thirty square yards or so about a hundred yards above Lough Fern, on the east side, and about half-way between the Milford end of the lake and Mr. Swiney's residence at Moyagh. The situation is amongst stumps of hazel in a rough uncultivated half-cleared patch of ground. Mrs. Leebody also sent me fresh specimens of *Polygonum Bistorta* from near the Reelan River, in the Frin Valley, where it appears to be an undoubted native; and informs me that she has gathered *Galium Mollugo* near Eglinton, Co. Derry: this is a very rare plant in Ulster. These interesting finds of Mrs. Leebody's were originally made in 1889 and 1890. She then sent specimens to Mr. S. A. Stewart, of Belfast, who named them for her. *Stachys Betonica* is extremely rare in Ireland. It grows, I know, in Armagh. Several of the old localities in the *Cybele Hibernica* are certainly errors. Unfortunately the serious and deplorable illness of our valued Irish botanist, A. G. More, prevents me from obtaining full information from his collected materials for the new *Cybele Hibernica*.—H. C. Hart.

Polygala oxyptera Reichb. in W. Sussex.—I found this plant, last May, in some abundance on sandy, grass-grown ground west of the Arun, and nearly opposite the ferry, at Littlehampton. *Silene conica* L., noted in *Topographical Botany* as doubtfully wild, is certainly native on both sides of the river, where previous observers have repeatedly gathered it. The var. *glutinosa* Koch of *Arenaria serpyllifolia* L. also occurs east of the river's mouth.—Edward S. Marshall.

East Gloucester Plants.—Last month I was glad to gather *Carex tomentosa* still nearer to the Berkshire boundary than its former known habitat, but I am not so sanguine of its reaching that county now as I was at first. The character of the meadows changes considerably, and the rich, lush grass of the Thames meadows in Berkshire is not so favourable a habitat for sedges as the more barren meadows of the Coln Valley with their profuse sedge growth. For instance, in them yesterday I gathered *Scirpus Caricis*, *Carex pulicaris*, *C. disticha*, *C. ovalis*, *C. tomentosa*, *C. Goodenowii*, *C. flava*, *C. flacca* (*C. glauca*), *C. ampullacea*, *C. paludosa*, *C. acuta*, *C. fulva*, *C. binervis*, *C. hirta*, *C. riparia*, and *Eriophorum angustifolium* in beautiful condition. Other plants noticed in one vicinity were *Ceterach*, *Thymus*, *Sieglingia*, *Bromus racemosus*, *Poa compressa*, *Festuca rigida*, *Carduus pratensis*, *Valeriana dioica*, *Brachypodium pinnatum*, *Thalictrum flavum*, *Ranunculus Drouetii*, *R. trichophyllus*, *Lithosperma officinale*, *Ophioglossum vulgare*, *Erysimum orientale*, *Potamogeton flabellatus*, *P. pectinatus*, *P. Friesii*, *Scirpus acicularis*, *S. multicaulis*, *S. pauciflorus*. The canal gave a curious instance of restricted habitats; in this still water grew a great quantity of *Alisma ranunculoides*, but with the lock which marks the entrance of the Cole and Coln to the Thames the plant ceases; not a scrap could I see in the River Thames, into which the canal runs at this point, nor does *Chara hispida* show itself in the river. Both these plants might be well assumed to grow in the river into which the canal passes, but this is not the case; the former of the two I have not yet found in Berks.—G. Claridge Druce.

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## *NOTICES OF BOOKS.*

*Missouri Botanic Garden. Third Annual Report.* St. Louis, Mo.: published by the Board of Trustees. 1892. 8vo, pp. 170, tt. 57.

This volume is as beautifully printed and as admirably got-up as its predecessor, which we noticed on p. 32. Like the former Report, it contains several important botanical papers. Prof. Trelease, the Director of the Garden, contributes a revision of the North American species of *Rumex*, illustrated by thirty-three excellent plates; some notes on Yucca; and the description of a new *Agave* (*A. Engelmanni*), with thirteen plates mostly after drawings by Engelmann. Nineteen species of *Rumex* are catalogued as occurring north of Mexico; Prof. Trelease gives full descriptions, and a copious list of localities, in which we are glad to see the collectors' numbers cited. Among his authorities he cites Dr. Trimen's various papers published in this Journal about twenty years since, when Docks were in fashion; does anyone study them now in England? Prof. C. V. Riley gives a careful and comprehensive summary of the facts connected with pollination of Yucca by *Pronuba yuccasella*, accompanied by eight plates; and there is a note and plate of *Parmelia molliuscula* by Mr. T. A. Williams.

The Director's Report shows that good work is being done in the Herbarium. Besides purchases of published sets, Mr. Hitchcock's West Indian collections, amounting to about 2000 specimens, have been added to the collections. The Engelmann and Bernhardi herbaria (containing respectively about 98,000 and 57,500 specimens) have been mounted and arranged; and Prof. Trelease has presented his private herbarium, containing about 11,000 specimens, chiefly of fungi, to the Garden.

The Report also contains a "Flower Sermon" by the Rev. Montgomery Schuyler, which seems to us rather dear at 200 dollars, although it contains some remarkable passages. When Charles Kingsley visited Mr. Shaw at the Garden in 1874, they became great friends, and "the Canon showed himself as familiar with the botanical names [of the exotics] as if they were the members of his own family." Their intercourse was "a mutual delight," and Kingsley "warmly expressed his intention, upon his return to England, of securing in [Mr. Shaw's] behalf the honor of an appointment as a Fellow of the Royal Society." Unfortunately, he died before he could "carry out his generous purpose." After the sermon came a "banquet" for "the Trustees and their guests," and some months later there was another for "gardeners, florists, and nurserymen"; and the speeches at these festive gatherings are printed *in extenso!* "Where can we find another such a man, with such a history, who has done so much for any city, aye, so much for any country, as Henry Shaw has done?" asked the Hon. Norman J. Colman: "what other city, what other state, what other nation has had a Henry Shaw, leaving so munificent a donation, leaving such a grand work for humanity?" Mr. Shaw, who is described as having been "modest" and "unassuming," and who was moreover an Englishman, would, we imagine, have felt somewhat uncomfortable under the hon. gentleman's eloquence.

The Hon. Charles E. Hay made a speech about Orchids. "Enthusiasts have said," he observed, "that there is a degree of intelligence in an orchid kindred to the intelligence that is in man. That as man is the noblest of the animal creation, endowed with the faculty of looking his Creator in the face, and having an intellect to express his thoughts, the orchid, being the last created specimen of the floral kingdom, has some of those attributes. I do not say so myself, I am not so much of a crank as that, but there is something in the modern orchid corresponding to man. There are no traces of orchids found in the clay formations. No geologists claim that they have found anywhere traces of them. They have found flowers, but no orchids. . . . . I know of no flower in bloom that, to use the English expression of a French friend, is so thoroughly fetching as the well grown orchid. I do not know of any flower that I would rather devote myself entirely to than the orchid, and, for the reason, as Mr. Trelease has so well said, that I am absolutely fond of them. It does seem to me that when I am in the presence of an orchid I am in the presence of a plant that, as the old Irishman said, 'has sense.'" One wonders how an orchid would feel in the presence of the Hon. Charles E. Hay.

*Handbuch für Pflanzensammler.* Von Dr. Udo Dammer. 8vo, pp. x. 342, 59 cuts, 13 plates. Stuttgart, 1891.

This present little work was undertaken to teach the plant-lover, in the widest sense of the word, how to arrange his collections. The author hopes especially to be of use to the teacher in helping him to make plant-life and its relations comprehensible to his pupils. The plant-lover who spends his leisure in the open air will find guidance, and those to whom it is given to visit foreign lands will learn how and what to collect. A great deal of valuable information has certainly been got into the comparatively small space which the book occupies, and Dr. Dammer is careful to consider different tastes and divide his matter accordingly.

The first few chapters deal with the collector's equipment, and the collection and preparation of specimens. The statement on page 3 that the Linnean Herbarium is in the rooms of the British Museum is a pardonable error, and does not detract from the value of the many hints and suggestions, which include recipes for drying succulent plants and flowers, for the preparation of Conifers with deciduous needles, and the preservation of dehiscent fruits in glycerine. To assist in the determination of the flowering plants, a general review is given of Hooker and Bentham's cohorts, and an explanation of the parts of the flower, the inflorescence, and leaf-arrangement illustrative of their importance to this end. The mounting of the specimens and their arrangement in the herbarium occupies the seventh chapter, and the remaining ten are devoted to the various tastes in collecting: first the biological collection, comprising the relations of plants to their surroundings, whether atmospheric conditions, the animal world, or other plants; then a few hints for a pathological collection, followed by the teratological series, in which Dr. Masters's well-known book is largely referred to. The "fruit and seed collection" contains further information as to the preservation of fruits, several methods being described. The preparation of woods, and especially of sections, for microscopic examination is the chief point in the few pages on the wood collection. After a short chapter on buds, the leaf collection is considered at greater length, and various points of biological interest worthy of illustration suggested. The fern collection begins with an explanation of the microscope, and how to work it; this is followed by a brief account of the life-history of the group, and a capital description of the venation, sporangia, and sori, which are of importance in the discrimination of the orders and genera. A brief account of the orders is also given. This chapter contains some excellent figures borrowed from Luerssen, as do also the succeeding two, in which the Mosses and Thallophytes are treated on a similar plan, but somewhat exhaustively for the size of the book. Some preparation-methods which are not included in the body of the work are brought together towards the end; they deal chiefly with Fungi and their spores.

The text concludes with a classified list of Floras; Germany boasts thirty-nine; "England" only three—Bentham's *Handbook*, Edmonston's *Flora of Shetland*, and the *London Catalogue!* Surely

Babington and Hooker might have been included. After the copious index is a table for the determination of the families of flowering plants, probably about as useful as most of the kind, though the indication, "Bluthen mit Discus; Discifloræ: do. ohne Discus; Thalamifloræ," does not look hopeful. The thirteen plates contain sections of the flower, fruit, and seed of the orders of flowering plants, arranged according to the *Genera Plantarum*. The sketches are clear and good, and will doubtless prove a useful addition; they are, as acknowledged in the preface, mostly copies from Schnizlein's *Iconographia*. A. B. Rendle.

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*Grasses*. By C. Henry Johns, M.A. London: S.P.C.K. 8vo, pp. 96. Price 1s. 6d.

This little book begins badly. It is called "Grasses," whereas a third of it is devoted to Sedges: it is styled "An Appendix to the late Rev. C. H. John's *Flowers of the Field*," whereas everyone knows that the author of that work was named C. A. Johns: and its cover is—we can hardly say ornamented—with a figure of *Typha latifolia*, which of course is not a grass.

*Flowers of the Field*, which first appeared in 1853, and has run through some twenty-six editions, occupying a position between the gossipy and usually inaccurate books about "wild flowers" and the recognised floras, was in its day a useful book for beginners. It might be made so now, if it were brought up to date, but each "edition" is a mere reprint: it gives a very imperfect notion of the British Flora as at present known.

Unfortunately, the same must be said of the *Appendix* now before us. We find no mention of *Spartina alterniflora*, *S. Townsendi*, *Anthoxanthum Puelii*, *Apera interrupta*, *Psamma baltica*, and others, while the more critical genera are dealt with very perfunctorily; and among the Sedges (which, by the way, are placed *after* the Grasses) there is no record of *Schœnus ferrugineus*, *Carex ornithopoda*, *C. frigida*, *C. ustulata*, and others. The illustrations, both old and new, are lamentably weak, and there is not a single dissection of a flower. There are many other matters for criticism, did space allow; but what has been said will sufficiently show the unsatisfactory character of the book. The introductory portion, and indeed the whole treatment of the subject, force us to the conclusion that Mr. C. H. Johns has a very slight acquaintance with either grasses or sedges; and we regret that so important a body as the S.P.C.K. should put forward so useless a volume.

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## *ARTICLES IN JOURNALS.*

*Bot. Centralblatt* (No. 30).—A. Nehring, 'Die Flora des diluvialen Torflages von Klinge bei Cottbus.'—(Nos. 31–34). E. Wilczek, 'Zur Kenntniss des Baues der Frucht und des Samens der Cype-

raceen' (6 plates). — (No. 34). F. Höck, 'Zur Systematischen Stellung von *Sambucus*.'

*Bot. Gazette* (July 20). — G. A. Rex, '*Lindbladia*.' — D. T. MacDougal, 'Tendrils of *Passiflora cærulea*' (1 plate). — M. B. Thomas, 'An Apparatus for root-pressure.' — C. L. Holtzman, 'The Stem and Sporangium of *Botrychium*' (1 plate).

*Bot. Zeitung* (July 22). — J. Wiesner, 'Eine Bemerkung zu Pfeffer's 'Energetik der Pflanze.'' — E. Schelle, 'Monströse Buchenblatter.' — (July 29–Aug. 5). L. Jost, 'Ueber R. Hartig's Theorie des Dickenwachsthums und der Jahrringbildung.' — (Aug. 12). W. Beneille, 'Die Nebenzellen der Spaltöffnungen.'

*Bull. Soc. Bot. Belgique* (xxxi., pt. 1: July 27). — A. Wesmael, 'Monographie du *Fraxinus*.' — (Pt. 2). F. Crépin, 'Tableau analytique des Roses européennes.'—Id., 'Distribution géographique du *Rosa stylosa*.'— F. Renauld & J. Cardot, 'Musci exotici novi vel minus cogniti.' — J. Cardot, 'De l'inégalité de valeur des types spécifiques.'

*Bull. Soc. Bot. France* (xxxix., Comptes rendus 2: Aug. 1).— A. Chabert, 'Plantes de France et de Corse.' — J. A. Battandier & L. Trabut, 'Voyages botaniques en Algérie' (*Anthemis kabylica*, *Salsola zygophylla*, *Allium Massæssylum*, *A. getulum*, *Platanthera algeriensis*, spp. nn.). — P. & H. Duchartre, 'Les feuilles du *Senecio sagittifolius*.'—E. Mer, 'Sur les causes de la variation de la densité des bois.' — Id., 'Influence des décortications annulaires.' — P. Duchartre, 'Sur une monstruosité du *Physostegia virginiana*.'— A. Franchet, 'Sur le groupe des *Leontopodium*' (*Gnaphalium subulatum*, sp. n.).—'Propositions relatives à la Nomenclature.'

*Bull. Torrey Bot. Club* (July). — A. Schneider, 'American *Rhizobia*' (2 plates). — N. L. Britton, 'New or noteworthy N. American Phanerogams' (*Polemonium Van Bruntiæ*, *Phlox Kelseyi*, spp. nn.: 1 plate).—T. Morong, *Eriocaulon bilobatum*, sp. n.

*Gardeners' Chronicle* (July 30). — *Dendrobium chrysocephalum* Kränzl., sp. n. — (Aug. 6). *Marica occidentalis* Baker, sp. n. — M. Foster, '*Iris Lorteti*' (fig. 27). — J. Weathers, '*Cyrtanthus Tuckii*' (fig. 28).—(Aug. 13). *Odontoglossum Owenianum* Rolfe, *Zygopetalum graminifolium* Rolfe, spp. nn.).—(Aug. 20). *Vanda vitellina* Kränzl., sp. n.).—'*Urceocharis* ("gen. nov. arte cl. Clibran inter *Urceolinam* et *Eucharidem* confectum") *Clibrani* Mast.' (fig. 36).—'Displacement and Simulation' (figs. 37, 38).

*Kew Bulletin* (July & Aug.). — 'False Sissal' (*Agave decipiens* Baker, sp. n.).

*Oesterr. Bot. Zeitschrift* (Aug.). — P. Dietel, 'Ueber den Generationswechsel von *Puccinia Agropyri*.'—A. Waisbecker, 'Ueber die Büschelhaare der Potentillen.'—C. Baenitz, *Ribes rubrum* var. nov. *pseudopetræum*.—J. Freyn, 'Plantæ Orientales' (contd.: *Tragopogon albinerve*, *Scorzonera bicolor*, *S. Sintenisii*, *Hieracium Sintenisii*, *H. odontophyllum*, spp. nn.).—P. Conrath, '*Viscum* aus Eichen.'

## *BOOK-NOTES, NEWS, &c.*

We regret to say that the printing of the *Biographical List of British Botanists* has been unexpectedly delayed, and, although nearly one-half is in type, its publication can hardly take place before the beginning of 1893, although we hope it will not be delayed beyond that date. The list of First Records of British Flowering Plants, which Mr. W. A. Clarke is now publishing in these pages, will be reissued in pamphlet form, and we shall be glad to receive any corrections for incorporation in the reprint. Mr. E. G. Baker's 'Synopsis of Malveæ' will, it is hoped, be completed by the end of the year.

General Paris, of Dinard, Ille-et-Vilaine, France, is preparing a *Nomenclator Bryologicus* on the plan of Steudel's *Nomenclator Botanicus*, and will be grateful if bryologists will send him copies of recent memoirs, or exact references to the descriptions of new species.

The Bromley Naturalists' Society has appointed a Committee to draw up lists of the fauna and flora of Bromley Union district, which comprises the parishes of Beckenham, Bromley, Chelsfield, Chislehurst, Cadham, Down, Farnborough, the Crays, Hayes, Keston, Knockholt, Mottingham, Orpington, and West Wickham. If properly carried out, the work should form an important contribution to the long-delayed and much needed Flora of Kent, upon which our readers will be glad to know that Mr. F. J. Hanbury is at the present time actively engaged. The Bromley naturalists will no doubt exercise caution with regard to the flora of Keston Common, on which the improver upon Nature has been at work, as we mentioned on p. 224. Mr. J. French, 99, Widmore Road, Bromley, will be glad to receive information.

Mr. J. Bretland Farmer, the Demonstrator of Botany in Oxford University, has succeeded Dr. D. H. Scott as Assistant-Professor in Botany at the Royal College of Science, South Kensington. Dr. Scott has accepted the Keepership of the Jodrell Laboratory at Kew.

Mr. J. G. Baker has reprinted in book form the *Summary of New Ferns discovered or described since 1874* (Clarendon Press; "cash price 5s. net").

M. J. Bornmüller, who started last winter for an exploring tour in Persia, left Teheran early in the year for Kum and Sultanabad, and went from there to Ispahan by way of Gulpaigam. All the way from Sultanabad to Ispahan he met with an abundant but monotonous flora of bulbous plants, besides which little else was to be seen. He notes especially *Merendera persica* and *M. sobolifera*, *Colchicum Szovitzii*, *Iris persica*, and various Gageas. Then he spent nine days from Ispahan to Yezd, and twelve from Yezd to Kerman. An excursion from Yezd to the Shir Kuh mountains, which he says were bristling with snow and ice, was successful only in the lower parts, as the season was not advanced

enough for the higher regions of this mighty range (4000–4200 m.). In Kerman, M. Bornmüller explored Kuh Sirg and Kuh Tupar. He reached 3920 m. on the former, and 3300 m. on the latter, but hoped to get to the summit of Kuh Jupar (4300 m.) as soon as the season would allow. On Kuh Jupar the rocks were carpeted with cushions of *Dionysia curviflora*, each covered with hundreds of the most brilliant flowers, whilst large masses of *Ephedra* sp. formed thick woods between 2900 and 3000 m., which were visible at a great distance. M. Bornmüller intends to stay in Kerman till autumn, and to continue the exploration of the high mountain flora. Then he wishes to go to Bushir or to Bender Abbas, and to visit the Hamrin Hills between Bagdad and Mossul and the Syrian desert during the spring of 1893.

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## *OBITUARY.*

I REGRET to record the death of Mr. GEORGE DAVIES, who was born at Brighton on Feb. 12, 1834, and died there on April 6th at the age of fifty-eight years, more than thirty of which were devoted to the study of Mosses, Hepaticæ and Lichens. At the beginning of his bryological career he had the great advantage of making the acquaintance of Mr. Mitten, which was of inestimable service to him as a student, and resulted in a life-long friendship. In 1862 he contributed a paper on the moss-flora of the district to Erridge's *History of Brighton;* in 1870 he was associated with the undersigned in the compilation of a complete bryological Flora of the entire county of Sussex; and he contributed some valuable notes on the distribution of cryptogams in Cornwall and Devon to the papers published by Messrs. Holmes and Brent; he was also an occasional contributor to *Grevillea*, *Science Gossip*, and the *Revue Bryologique*. He was an unwearied collector and student, thanks to a strong constitution, and he detected in Sussex a number of rarities, among which were *Barbula Vahliana* and *Bartramia stricta*. He also found time to investigate the floras of other countries, a rich collection of whose mosses and hepatics are represented in his herbarium. During his annual holidays, which were usually spent in the south of Europe, he worked incessantly, finding nearly every rarity enumerated in Schimper's *Synopsis;* and he published a paper on Piedmont and Nice cryptogams in *Grevillea*, ii. 173 (1874). In Scotland, during a hurried holiday, he had the good fortune to detect *Steetzia Mörkii* on Ben Lawers (see *Grevillea*, iv. 76). During our long friendship of twenty-five years, I learned to esteem him for his many amiable qualities, and his well-cultivated and well-stored mind; and I look back with sincere regret to those rambles in which I found him such an agreeable companion. During the last two years he suffered from failing health, and was eventually compelled to abandon his favourite studies; and on April 6th he passed away peacefully from this life. As was mentioned on p. 256, his herbarium has been presented to the British Museum. —C. P. SMITH.

R Morgan del et lith.

# Ranunculus petiolaris.

West, Newman imp

# ON AN APPARENTLY ENDEMIC BRITISH *RANUNCULUS*.

By the Rev. E. S. Marshall, M.A., F.L.S.

(Plate 328.)

**Ranunculus petiolaris,** n. sp. — Root of many long white fibres. Stem solitary, 9 in. to 2 ft. high, $\frac{1}{6}$–$\frac{1}{3}$ in. in diameter near the base, erect, rigid, usually more or less zigzag in outline, striate, fistular, often purplish, very brittle. Original root-leaves reduced to subulate petioles, rather numerous, the outer ones recurved, mostly disappearing before the flowers open; later root-leaves subpersistent, but very easily detached, erect or ascending, with or without a short, blunt, linear-oblong blade, frequently 4–5 in. long; lower stem-leaves similar, very erect; uppermost linear or linear-oblong, subsessile; all quite entire. Flowers few (1–4), as a rule solitary, large for the plant; sepals and fruit of *R. Flammula;* petals with a cuneate base, so that they appear to be distant, broadening upwards to the truncate top. Whole plant quite glabrous.

Syn.—*R. Flammula* L., var. *petiolaris* Lange ined., Marshall in *Journ. Bot.* 1888, 230.

Habitat.—Gravelly margins of small Highland lakes in W. Scotland. Kingshouse, Argyle!; Sligachan, Skye, *E. F. & W. R. Linton*, sp.; Assynt, W. Sutherland!

This remarkable form was first met with by myself in June, 1888, and by Messrs. Linton in the following August. It grows by preference in water two or three inches deep, and never, so far as our experience goes, occurs more than a yard or two from the margin; occupying, in fact, much the same position as *Subularia aquatica*, with which it is associated in the original station (Lochan Mathair Etive). In one instance I have seen the stem slightly creeping at the base, but this was evidently exceptional and abnormal. The remarkably erect habit and peculiar leaves at once attract attention, especially as the plant is usually very abundant where it occurs. During the present summer I have searched for it by various lakes in the east of Scotland, from Selkirkshire to Ross, but without success, although in several instances the locality was quite suitable. Both in Skye and Argyle it ripens fruit freely. Likely to be found in Ireland.

I have retained Prof. Lange's varietal name in a specific sense, as being so thoroughly appropriate; the more readily, since he himself, when determining the plant, added, "vel species nova." After long consideration, this, my own original impression, has been so much strengthened, that I have decided on putting it forward as distinct, although it has a great deal in common with *R. Flammula*, and many botanists may prefer to leave it as a variety or "subspecies." Mr. F. J. Hanbury, to whom I showed some thousands of living specimens near Kingshouse, and with whom I found it in Sutherlandshire, writes:—"I am glad you are going to describe *Ranunculus petiolaris* as a species, as I am sure it is worthy of

specific rank." This, however, I should scarcely have ventured to do, had not the constancy of the characters relied on been severely tested by cultivation under circumstances wholly unlike the natural ones. Roots which were sent home, four years ago, fortunately survived, and have flowered for two successive seasons. Polymorphic as *R. Flammula* is, the variations do not appear to be permanent; var. *radicans* Nolte, perhaps the most marked of them all, was at once found by Mr. Beeby to revert to the type, when grown in a pot. *R. petiolaris*, on the contrary, though (like most perennial wild flowers) somewhat modified by the richer and drier soil of an ordinary garden-border, has retained its peculiarities in a very high degree; the root-leaves showing no appreciable change, and those of the stem only becoming a little coarser and larger in the blade. The stems are weaker, and eventually prostrate; small plants, with the curious radical leaves characteristic of this species, being formed by nodal rooting. As it is unable to mature seed under the altered conditions of existence, the plant is thus specialised, and enabled to hold its own.

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EXPLANATION OF PLATE 328.—1. *Ranunculus petiolaris*, flowering (a small specimen, with most of the root-leaves already detached). 2. Ditto, showing the root-leaves as first developed in spring.

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# SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By EDMUND G. BAKER, F.L.S.

(Continued from p. 240.)

λ. Caules erecti? Folia suborbicularia supra rufescentia basi cuneata. Carpella ?

65. S. SUBORBICULARIS St. Hil. in Ann. Sc. Nat. Ser. 2, xviii. p. 53.

Hab. Brazil. Rio Grande do Sul!

μ. Caules prostrati. Folia parva discolora ovata basi rotundata. Carpella 5–7.

66. S. MICROPHYLLA Cav.; DC. Prod. i. p. 461; Seem. Fl. Vit. p. 15. *S. parvifolia* DC. *l. c.* p. 461. *S. salicifolia* Forst. Herb. *S. rhombifolia* var. *microphylla* Mast. *l. c.* p. 324.

Hab. India! Bourbon. Polynesia! Pescadores Is.!

67. S. VESCOANA Baill. in Bull. Soc. Lin. Par. 1885, p. 504.

Hab. Madagascar. Port Leven, *M. Vesco*!

68. **S. nummularia,** sp. n. — Caulibus prostratis ligneis, foliis ovatis parvis serratis discoloris supra nigrescentibus subtus canescentibus petiolatis, stipulis parvis linearibus, calyce angulato sepalis ovatis acuminatis, petalis luteis calyce longioribus, carpellis 6 muticis dehiscentibus.

Hab. Isle of Pines! *Milne*. Herb. Kew.

Branches 7–9 in. long; leaves $\frac{1}{3}$–$\frac{1}{4}$ in.; sepals $\frac{1}{5}$ in. long.

69. **S. discolora**, sp. n. — Caule ramoso ligneo ramibus filiformibus minute pubescentibus, foliis parvis ovatis vel ellipticis discoloris supra nigrescentibus subtus albo-cinereis serratis basi cuneatis petiolatis, stipulis linearibus, floribus solitariis vel subsolitariis leviter pedunculatis pedunculis petiolis longioribus ad apicem articulatis, calyce angulatis sepalis triangularibus acuminatis vel acutis, petalis flavis calyce longioribus, carpellis 5.

Hab. Timor, *Teysmann*, No. 10809! Herb. Kew.

Branches 6–10 in. long; leaves $\frac{1}{2}$–$\frac{3}{4}$ in. long, petiole $\frac{1}{8}$ in.; peduncles $\frac{1}{4}$ in.

Resembles *S. microphylla* Cav., but has much shorter peduncles.

*ν*. Caules diffuse procumbentes vel prostrati. Folia parva basi cordata vel subcordata. Carpella 5.

70. S. DIFFUSA H. B. K. Nov. Gen. et Sp. v. p. 257. *S. filiformis* Moric. Pl. N. Am. t. 25. *S. filicaulis* Torr & Gray, i. p. 232.

Hab. United States. Texas! Arizona! New Mexico! Mexico! Bolivia! Mauritius! Seychelles!

Var. SETOSA. *S. filicaulis* var. *setosa* A. Gray, Pl. Wright. ii. p. 22.

Hab. N. Mexico!

71. S. SUPINA L'Herit. Stirp. t. lii. bis. *S. pilosa* Cav.!; DC. Prod. i. p. 463. *S. ovata* Cav.; DC. *l. c.* p. 463. *S. procumbens* Swartz. Fl. ii. p. 1211. *S. betonicæfolia* Balb.; DC. *l. c.* p. 463. *S. hispida* Bertero, non Pursh.

Hab. United States. Florida! West Indies! Mexico. New Granada! Argentine Republic.

*ξ*. Caules erecti. Folia molliter tomentosa basi cordata vel subcordata.

* Carpella 10–12.

72. S. CORDIFOLIA L.; DC. Prod. i. p. 464; K. Schum. *l. c.* p. 330, t. lxii. *S. herbacea* Cav.!; DC. *l. c.* p. 463. *S. micans* Cav.!; DC. *l. c.* p. 462. *S. multiflora* Cav.!; DC. *l. c.* p. 464. *S. maculata* Cav.!; DC. *l. c.* p. 462. *S. Borbonica* Cav.; DC. *l. c.* p. 464. *S. suberosa* L'Herit. Stirp. p. 113, t. 54. *S. rotundifolia* Lam.; DC. *l. c.* p. 464. *S. africana* Pal. Beauv. Fl. Owar. ii. p. 87. *S. altheæfolia* Swartz; DC. *l. c.* p. 464. *S. tomentosa* Vell. Fl. Flum. vii. t. 14. *S. Velloziana* Steud. Nom. ii. p. 580. *S. byssina* et *velutina* Schr. in Syll. Ratisb. ii. pp. 70, 71. *S. pungens* H. B. K. Nov. Gen. et Sp. v. p. 263. *S. pellita* H. B. K. *l. c.* *S. holosericea* et *aristata* Willd.; Spr. Syst. Veg. iii. pp. 112 & 166. *S. waltherifolia* et *ciliosa* Boj. *S. decagyna* Schum. et Thon. Beskr. p. 307. *S. conferta* Link; DC. Prod. i. p. 473. *S. vestita* Steud. Nom. ii. p. 580

Hab. Tropical and subtropical regions.

Var. MUTICA. *S. brachypoda* F. v. Muell. in Herb. — Carpellis muticis.

Hab. Australia. McArthur's River. Gulf of Carpentaria!

Var. SERRATA.—Foliis oblongis basi rotundatis grosse serratis.

Hab. Bolivia. Prov. Larecaja, *Mandon*, No. 823!

73. S. TRAGIÆFOLIA A. Gray, Pl. Lindh. p. 164.
Hab. Texas.

* * Carpella 5.

74. S. AGGREGATA Presl, Reliq. Haenk. ii. p. 106.
Hab. Jamaica! Mexico. Central America! Venezuela.

o. Caules erecti vel decumbentes. Folia plus minusve cinerea molliter pubescentia basi rotundata vel subcordata. Carpella 7–10.

75. S. FALLAX Walp. Reliq. Meyen. p. 306; Hillebrand, Fl. Sand. Is. p. 44. *Anoda ovata* Meyen. Reise, ii. p. 139.
Hab. Polynesia! South China! Cochin China!

Var. β. Hillebrand, *l. c.* *S. Diellii* A. Gray, Bot. United States Expl. Exp. p. 162.
Hab. Sandwich Is.!

Var. γ. Hillebrand, *l. c.* *S. Sertum* Nutt. ex A. Gray, *l. c.* p. 163. *S. rotundifolia* Gaud. ex Hook. & Arn. Bot. Beech. p. 79.
Hab. Sandwich Is.!

Var. δ. FLAVESCENS.—Tota herba flavescens.
Hab. Malden Islands, S. Pacific, *Macrae*!

76. S. PURPURASCENS Salz. MS. in Herb. DC.; K. Schum. *l. c.* p. 333.
Hab. Brazil. Bahia! Ceara. Minas Geraes!

77. S. CAMPESTRIS Benth. Pl. Hartweg. p. 113.
Hab. Ecuador. Guayaquil!

π. Caules erecti vel prostrati. Folia ovata vel ovato-oblonga lanceolata acuminata vel acuta plus minusve molliter tomentosa interdum viscidula basi cordata vel subcordata.

* Carpella 5–6.

78. S. TOMENTELLA Miq. in Linnæa, xxii. p. 553; K. Schum. *l. c.* p. 309.
Hab. Brazil. Minas Geraes! Rio de Janeiro.

Var. β. BREVICALYX K. Schum. *l. c.* p. 309.
Hab. Minas Geraes, nr. Caldas.

79. S. SAVANNARUM K. Schum. *l. c.* p. 309.
Hab. British Guiana, *Schomburgk*, No. 819.

80. S. MARTIANA St. Hil. Fl. Bras. Merid. i. p. 187.
Hab. Brazil! Paraguay. New Granada! Venezuela!

81. S. ARGENTINA K. Schum. *l. c.* p. 315.
Hab. Argentine Republic.

82. S. CAUDATA St. Hil. et Naud. in Ann. Sc. Nat. ser. ii. xviii. p. 52.
Hab. Brazil. Minas Geraes.

* * Carpella 7–10.

83. **S. Teysmanni,** n. sp. — Caule erecto piloso, foliis pauce discoloris cordatis lanceolatis acutis serratis petiolatis molliter fulvo-tomentosis, floribus axillaribus pedunculis unifloris petiolis longioribus, sepalis ovatis vel lanceolatis acuminatis, carpellis 8–10 angulatis biaristatis dorso lateribusque rugosis.

Hab. Timor, *Teysmann*, No. 10804!

Stem 1–3 ft. high or more; leaves $1\frac{1}{2}$–2 in. long; peduncles $1\frac{1}{4}$–$1\frac{3}{4}$ in. long.

84. S. SUBCORDATA Span. in Linnæa, xv. p. 172.

Hab. Timor.

ρ. Caules erecti. Folia ovata vel lanceolata basi cuneata vel rotundata vel subcordata. Carpella 7–10.

85. S. MEYENIANA Walp. Rel. Meyen. p. 307; Hillebrand, Fl. of Hawaiian Is. p. 45. *S. ulmifolia* Hook. & Arn. in Bot. Beech. p. 79.

Hab. Sandwich Is.!

σ. Caules prostrati vel erecti. Folia ovata vel oblonga glabra pilosa vel glandulosa basi cordata. Carpella 5–6.

86. S. VERONICÆFOLIA Lam. Encyc. i. p. 24; DC. Prod. i. p. 463. *S. morifolia* Cav.; DC. Prod. *l. c.* *? S. radicans* Cav.; DC. Prod. *l. c.* *S. unilocularis* L'Herit.; DC. Prod. *l. c.* *S. Jussiæana* DC. Prod. *l. c.* *S. nervosa* Wall. Cat. 1853, non DC. *S. begonioides* Griseb. in Bonpl. vi. p. 3, No. 19. *S. chætodonta* Turcz. in Bull. Soc. Mosc. 1858, p. 199. *S. balica* Miq. Fl. Ind. Bat. i. pt. 2, p. 141. *S. auriculata* Herb. Griffith. *S. reclinans* Kunze in Linnæa, 1843, p. 579. *S. elongata* Bl. Bij. i. p. 76.

Hab. Tropics.

Var. HUMILIS K. Schum. *l. c.* p. 320. *S. humilis* L.; DC. Prod. *l. c.*

Hab. Tropics.

Var. HEDERIFOLIA K. Schum. *l. c.* p. 320. *S. hederæfolia* Cav.; DC. Prod. *l. c.*

Hab. West Indies! Ceylon.

Var. JAVENSIS. *S. Javensis* Cav.; DC. Prod. i. p. 465.

Hab. Java! Philippine Islands!

Var. DOMBEYANA. *S. Dombeyana* DC. Prod. i. p. 463; Hook. Bot. Misc. ii. p. 209, t. 89.

Hab. Peru. Bolivia! Veriezuela.

Var. MULTICAULIS. *S. multicaulis* Cav.; DC. Prod. i. p. 463.

Hab. Malabar!

The stems of this variety are covered with a white tomentum.

87. S. ARGUTA Swartz; DC. Prod. i. p. 464. *S. glabra* Mill. Dict. No. 14. *S. ulmifolia* Cav.; DC. Prod. i. p. 464. *? S. emarginata* Willd.; DC. Prod. i. p. 464. *? S. truncata* L'Herit. Stirp. i. t. 51, non Cav. *S. Swartzii* Dietr. Syn. iv. p. 847.

Hab. Central America! West Indies! Venezuela!

88. S. GLUTINOSA Cav.; DC. Prod. i. p. 464. *S. nervosa* DC. Prod. i. p. 465. *S. fasciculata* W. herb. in Spr. Syst. Veg. iii. p. 113. *S. fasciculiflora* Miq. Fl. Ind. Bat. i. pt. 2, p. 140. *S. mysorensis* W. et A. Prod. i. p. 59. *S. racemosa* Burm. Fl. Ind. p. 148. *S. hirta* Wall., non Lam. *S. Wightiana* Dietr. Syn. iv. p. 845. *S. Endlicheriana* Presl, Reliq. Haenk. ii. p. 111. *S. urticæfolia* W. et A. Prodr. i. p. 59. *S. viscidula* Bl. Bij. i. p. 76. *S. pan-*

*nosa* Turcz. in Bull. Soc. Mosc. 1863, p. 565. *S. Willdenowii* Dietr. Syn. iv. p. 847.

Hab. India! Cochin China! Malaya! Madagascar! Mauritius. West Indies! Central America! New Granada! Brazil.

Var. CINEREA. — Caule erecto, foliis longe petiolatis lanceolatis cordatis acuminatis serratis vel serrato-crenatis minute albo-puberulis, floribus axillaribus solitariis vel geminis pedunculatis pedunculis petiolis brevioribus ad mediam articulatis, sepalis triangularibus acuminatis, carpellis 5 biaristatis pubescentibus.

Hab. Jamaica, *Dr. Distan*!

89. S. DICTYOCARPA Griseb. Msc.; K. Schum. *l. c.* p. 314.

Hab. Argentine Republic!

Var. CORDOBENSIS Griseb. Msc.

Hab. Prov. Cordoba.

90. S. GOYAZENSIS K. Schum. *l. c.* p. 316.

Hab. Brazil. Prov. Goyaz.

91. S. DECUMBENS St. Hil. et Naud. in Ann. Sc. Nat. ii. xviii. p. 51. *S. stolonifera* Salz.

Hab. Brazil, *Burchell*, 8760!

92. S. ALAMOSANA S. Wats. in Proc. Am. Acad. xxvi. p. 133.

Hab. Mexico. Alamosana Sonora, *Palmer*, No. 683.

93. S. URENS L.; DC. Prod. i. p. 465. *S. verticillata* Cav.; DC. Prod. *l. c.* *S. debilis & sessiliflora* Don, Gen. Syst. i. p. 499. *S. densiflora* Rich. Fl. Abyss. i. p. 66. *S. conferta* Salz. Msc. in Tr. & Pl. Prod. *S. breviflora* Steud. *S. capitata*, in Herb. Wright. *S. congensis* Dietr. Synop. iv. p. 859.

Hab. Tropics and Subtropical regions.

Var. GRANDIFLORA K. Schum. *l. c.* p. 307.

Hab. Peru, *Pavon*.

Var. RUFESCENS. *S. rufescens* St. Hil. Fl. Bras. Merid. i. p. 185.

Hab. Brazil. Minas Geraes, *St. Hilaire*, No. 275!

94. **S. pseudo-urens**, n. sp. — Caulibus erectis herbaceis rufo-stellato-pubescentibus, foliis cordatis ovatis acutis serrato-crenatis petiolatis pilosis, floribus axillaribus et ad apicem caulium aggregatis leviter pedicellatis, sepalis triangularibus acutis rufo-pilosis, carpellis 5.

Hab. Peru. Tarapoto, *Mathews*, No. 1552!

Stem 1–2 ft.; leaves 1–1½ in. long, ¾–1 in. broad; sepals ⅐ in. long.

This plant is allied to *Sida urens* L.

† † Tubo calycis tereti.

95. S. PANICULATA L.; DC. Prod. i. p. 465; K. Schum. *l. c.* p. 294, t. lviii. *S. alpestris* St. Hil. Fl. Bras. Merid. i. p. 186. *S. atrosanguinea* Jacq. Ic. Rar. t. 136. *S. floribunda* H. B. K. Nov. Gen. et Sp. t. 473. *S. capillaris* Cav.; DC. Prod. i. p. 465. *S. pellita* Willd. in Spreng. Syst. Veg. iii. p. 115. *S. Humboldtii* Dietr. Syn. iv. p. 848.

Hab. West Indies! Tropical America! Paraguay!

Var. RUFESCENS.—Foliis rufescentibus.

Hab. Venezuela! Columbia! Paraguay!

Var. COMPACTA. *S. multiflora* Jacq. Obs. Pt. 2, t. 45, f. 1.—Paniculis compactis non laxe diffusis.

Hab. "In Antilles," *Jacquin*!

96. **S. Schweinfurthii**, n. sp. — Caule erecto tereto, foliis petiolatis ovatis inæqualiter serratis basi rotundatis utrinque minute pubescentibus, floribus paniculatis paniculo laxo magno pedicellis tenuibus, calyce tereto pubescente sepalis ovatis acutis, carpellis 5 dehiscentibus dorso rotundatis lateribus reticulatis apice breviter bicuspidatis.

Hab. Tropical Africa. Bongoland. Mongocongo, *Schweinfurth*, No. 2910!

Stem 3 ft. or more; leaves 2–3 in. long, 2–2½ in. broad.

97. S. FILIPES A. Gray, Pl. Lindh. p. 164.

Hab. Texas! North Mexico!

98. **S. Palmeri**, n. sp. — Caule erecto ligneo ramoso, foliis breviter petiolatis oblongis vel lanceolatis basi cordatis vel subcordatis molliter cano-tomentosis serratis, floribus solitariis axillaribus pedunculis gracilibus versus apicem articulatis, calyce non angulato sepalis triangularibus canescentibus, petalis calyce multo longioribus in sicco purpureis, carpellis dorso pubescentibus lateribus reticulatis.

Hab. Mexico; between San Luis Potosi and Tampico, *Palmer*, No. 1038!

Stem 2–3 ft. or more; leaves ¾–1 in. long; sepals ⅛ in.; petals ¼–⅓ in.

Somewhat resembles *S. filipes* A. Gray, but the leaves are concolorous and much shorter, and the peduncles are not nearly as long as in that species.

99. S. ACUMINATA DC. Prod. i. p. 462; K. Schum. *l. c.* p. 332. *S. maculata* Bert., non Cav.

Hab. Brazil! St. Domingo! Porto Rico!

Var. SESSILIS.—Floribus sessilibus vel subsessilibus.

Hab. Porto Rico! St. Thomas! Venezuela! Paraguay!

Var. BRACEI.—Foliis ovato-lanceolatis acutis serratis majoribus quam typo, pedunculis axillaribus et ad apicem ramulorum aggregatis gracilibus versus apicem articulatis, carpellis 8 stellato-pubescentibus.

Hab. New Providence, *Brace*, No. 436!

100. S. MICRANTHA St. Hil., A. Juss., et Camb. Pl. Us. t. xlix.; K. Schum. *l. c.* t. lix. *S. buttneriacea* Kl. in Bot. Zeit. iv. p. 102. *S. phlebococca* Griseb. Pl. Cub. p. 25. *S. rubra* Dietr. Synop. iv. p. 848.

Hab. Cuba! Venezuela! New Granada! Columbia! Brazil.

Var. PARVIFOLIA.—Foliis parvis.

Hab. Brazil, nr. Crato, Prov. Ceara, *Gardner*, 1467!

Var. DIFFUSA.—Paniculis laxe diffusis.

Hab. Brazil, nr. Catombi, *Burchell*, No. 1321.

101. S. DUMOSA Swartz; DC. Prod. i. p. 465. *S. pyramidata* Cav.; DC. Prod. *l. c.* *S. Hilariana* Presl, Reliq. Haenk. ii. p. 107.
Hab. Mexico! Jamaica! Cuba! St. Domingo! Porto Rico. Central America, New Granada!

Var. GLANDULIGERA. *S. glanduligera* Benth. Bot. Sulph. p. 69. *S. dumosa* Hook. & Arn. Bot. Beech. p. 42, non Swartz. — Copiose glanduloso calyce majore quam typo.
Hab. West Tropical America. Realejo!

Var. FENDLERI.—Caule ligneo, foliis floribusque minoribus quam typo, carpellis 6.
Hab. Venezuela, nr. Tovar, *Fendler*, No. 70!
*Sida dumosa* Seem., non Swartz, No. 2146, from Sierra Madre, N.W. Mexico, is a totally different plant from the above, and is apparently an Abutilon, but I have not seen the fruit.

102. S. BENENSIS Britton in Torrey Bulletin, 1889, p. 153.
Hab. Bolivia. Rivers Beni and Madre de Dios.

(To be continued.)

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# GLAMORGAN NOTES AND RECORDS.

By E. F. LINTON, M.A.

THE rarer plants of this county have been well worked in the past, and placed on record; and those now added to the county flora are chiefly commoner plants, or else species of critical genera which were not attempted by the Glamorganshire botanists who worked so well at the county half a century ago.

The following are, to the best of my belief, all new to the county, or else segregates which appear in *Topographical Botany* (ed. 2) under an aggregate species. Mr. Arthur Bennett has very kindly gone through my original list, and altered it where required:—*Fumaria confusa* Jordan, *Polygala vulgaris* L., and *Lychnis vespertina* L.; near Swansea. The two segregates, *Lepigonum marginatum* Koch and *L. salinum* Fr., var. *neglectum;* Penclawdd. *Geranium pratense* L. (queried in *Top. Bot.*); Glyn Neath. *G. Robertianum* L. var. *purpureum;* Lanmorlais. *Rubus erythrinus* Genev.; Glyn Neath; Killay; and on a small common near Mumbles Road. *R. carpinifolius* W. & N.; on the same small common near Mumbles Road. *R. gratus* Focke; railway-bank between Gowerton and Penclawdd. *Sedum anglicum* L., *Filago minima* L., and *Matricaria Chamomilla* L. (casual); in Gower. *Hieracium aurantiacum* L.; established on a railway-bank near Glyn Neath. *H. murorum* L.; on rocks. *H. orarium* Lindeb.; on a bank by the railway in Glyn Neath. *H. diaphanoides* Lindeb.; near the Resolven Waterfall, and on rocks of Craig-y-Llyn. *Solanum nigrum* L.; Lanmorlais. *Veronica agrestis* L.; Swansea. *Pinguicula vulgaris* L.; Craig-y-Llyn; evidently scarce. *Thymus Chamædrys* Fr. was the *segregate* I came across in Gower. *Galeopsis versicolor* L. (*G. speciosa* Mill.); Gowerton to Penclawdd. *Quercus pedunculata* (segregate), *Fagus*

*sylvatica* L., and *Humulus Lupulus* L.; seen in Gower. *Salix alba* L. and *S. viminalis* L.; about Lanmorlais (introduced). *Orchis latifolia* L. (segregate); locality in Gower not preserved. The *Juncus cænosus* form seen in Gower, on the N. coast, was *J. Gerardi* Lois.; and the *Ruppia* was *R. rostellata* Koch. *Carex pallescens* L.; rocky railway-bank near Glyn Neath. *C. distans* L. and *C. hirta* L.; near Gowerton. *Milium effusum* L.; in damp woodland near the Resolven Waterfall. *Deschampsia flexuosa* Trin.; on a railway-bank at Gowerton Station; not a very satisfactory situation, but the plant is likely enough to be native.

I believe that these varieties and hybrids that follow have not been noted for Glamorgan, and are therefore worth mentioning:— *Epilobium montanum* × *obscurum*, one root, and *E. montanum* × *roseum*, two roots, in a damp garden in Swansea, in which the two species last named abounded. *Erythræa Centaurium* Pers., var. *capitata* Koch; among the Whiteford Burrows. *Lamium purpureum* × *hybridum* (*L. decipiens* Sond.); cultivated ground along the railway from Gowerton to Penclawdd. *Rumex crispus* L., var. *trigranulatus* Syme; near Lanmorlais; this form I have only found near the sea. *Juncus conglomeratus* × *glaucus* (*J. diffusus* Hoppe); on wet ground adjoining the Crymlyn Bog; there is no doubt this is unrecorded for the county.

I add a few localities for rarer plants, already recorded, which may have an interest for botanists visiting Swansea or Gower:— *Althæa officinalis* is very abundant along the three miles of road between Lanmorlais and Llanrhidian; hardly any flowers are out before August. *Rosa systyla* Bast.; in a roadside hedge a little to the east of Penard Church. *Œnothera biennis* L.; well established among the Crymlyn Burrows. *Mentha sylvestris* L.; just across the river, opposite Glyn Neath Station. The *Sparganium* in the canal by the Crymlyn Bog is *S. minimum* Fr. *Alopecurus bulbosus* Gouan, may be found on the salt-marsh about half a mile west of Gowerton, in a ditch near high-water mark; apparently it is not plentiful.

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## SOUTH WILTSHIRE MOSSES.

By James Saunders.

The preliminary list of Mosses published on p. 69 was confessedly incomplete, and comprehended only those found in a limited area. Since its publication the Rev. A. L. W. Eyre has courteously placed at my disposal information concerning the Moss Flora of West Dean and its immediate vicinity. This is based upon a collection made about forty years ago, and comprises about eighty species, with half a dozen *Hepaticæ*. A few of the commoner mosses have been enumerated in the first list, and need not be repeated here.

The whole of the specimens have been carefully examined, and the nomenclature brought into accordance with the *London Cata-*

*logue*. The critical species have been forwarded to Mr. H. Boswell, who, with his usual courtesy, has given the benefit of his matured judgment upon them.

Unless otherwise specified, all were gathered by Mr. Eyre in the parish of West Dean.

*Weissia controversa* Hedw.
*W. cirrhata* Hedw.
*Dicranella varia* Hedw.
*Pleuridium subulatum* L.
*Seligeria calcarea* Dicks.
*Sphærium muticum* Schreb.
*Phascum cuspidatum* Schreb.
*P. rectum* Sm.
*Pottia minutula* Schweg.
*P. truncata* L.; also nr. Salisbury, *E. J. Tatum*.
*Tortula aloides* Koch.
*T. unguiculata* Dill.
*T. subulata* L.
*T. latifolia* B. & S.
*T. ruralis* L.
*Ceratodon purpureus* L.
*Grimmia apocarpa*.
*G. pulvinata* Dill.
*Ulota crispa* Hedw.
*Orthotrichum affine* Schrad.
*O. diaphanum* Schrad.
*O. Lyelli* H. & T.
*O. leiocarpum* B. & S.
*Physcomitrium pyriforme* L.
*Funaria hygrometrica* L.
*Leptobryum pyriforme* L.
*Bryum inclinatum* Swartz.
*B. capillare* L.
*Mnium hornum* L.
*Polytrichum formosum* Hedw.
*Fissidens bryoides* Hedw. West Dean, Alderbury, *E. J. T.*
*F. adiantoides* Hedw.
*F. taxifolius* L.
*Cryphæa heteromalla* Hedw.
*Leptodon Smithii* Dicks.
*Leucodon sciuroides* Schwæg.
*Neckera pumila* Hedw.
*N. crispa* L.
*Homalia trichomanoides* Schreb.
*Anomodon viticulosus* L.
*Thamnium alopecurum* L.
*Isothecium myurum*.
*Brachythecium salebrosum* Hoffm.
*B. velutinum* L.
*Eurhynchium striatum* Schreb.
*E. piliferum* Schreb.
*E. Swartzii* Turn. *E. J. T.*
*Rhynchostegiium ruscifolium* Neck.
*Amblystegium serpens* L.
*A. riparium* L.
*Hypnum filicinum* L.
*H. cupressiforme* var. *longirostrum*.
*H. resupinatum* Wils.
*H. stellatum* Schreb.
*H. cuspidatum* L. Generally distributed, *J. S.*
*H. splendens* Dill.
*H. brevirostrum* Ehrh.
*H. squarrosum* L.
*H. triquetrum* L.

### Hepaticæ.

*Frullania dilatata* L. West Dean.
*Radula complanata* L. ,,
*Madotheca platyphylla* L. Old Sarum, *J. S.*
*Cephalozia divaricata* Sm. *E. B.* West Dean.
*Lophocolea bidentata* L. West Dean; also nr. Salisbury, *E. J. Tatum*.
*L. heterophylla* Schrad. West Dean; also Redlynch, *E. J. T.*
*Scapania purpurea* Dill. Alderbury, *J. S.* [Dean.
*Plagiochila asplenoides* L. West
*Aneura multifida* (Dill.) Gray. Redlynch, *E. J. T.*
*Metzgeria furcata* (L.) Dum. West Dean.

# AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 272.)

Group 6. Radulæ.—St. for the most part low-arching, and producing rooting branches; generally as in the Egregii, except in having their faces rough throughout with numerous subequal short pricklets or their tubercular bases, acicles (glandular and eglandular) and shortly stalked glands; without the series of medium-sized prickles that occur in the Koehleriani. The large prickles nearly confined to the angles, subequal. Pan.-rachis abundantly furnished with rather shortly stalked glands and acicles; the lateral branches umbellate-racemose or cymose; the petals usually pale pink or white. In our species the stam. are uniformly longer than the styles, except in *Babingtonii* and *foliosus*, where they about equal them; while in *rudis* and *melanodermis* the styles are somewhat exceptionally prominent, though still below the level of the stamens.

Dr. Focke remarks that in many species of the preceding groups there occur forms with st. rough with tubercles (as, *e.g.*, in *R. Drejeri*), and that these *forms* probably do not admit of separation from the Radulæ by definite characters; while on the other side a sharp separation from the Hystrices (Koehleriani) is impossible, because in certain species and forms the intermediate medium-sized prickles occur, though rarely. "Still," he adds, "in the great majority of instances the Radulæ are thoroughly characteristic."

The following subdivisions will, I think, be found fairly reliable, so far as they go; but I fear that they are too vague and indeterminate to be of much real value:—

A. Larger prickles usually strong, subequal, almost wholly confined to angles:—(50) *radula* and vars.; (52) *echinatus*; (53) *rudis*.

B. *Sub-Koehleriani.* — Larger prickles unequal (the largest usually very strong), almost wholly confined to angles:—(51) *Newbouldii*; (54) *præruptorum*; (55) *melanodermis*; (56) *cognatus*; (57) *Babingtonii*.

C. *Sub-Bellardiani.* — Larger prickles usually not so strong, rather more scattered and unequal. St. often less angular:—(58) *scaber*; (59) *fuscus* and var.; (60) *pallidus*; (61) *Lintoni*; (62) *Lejeunei*; (63) *Rhenanus*; (64) *longithyrsiger*; (65) *foliosus*.

50. R. radula Weihe. — *St.* strong; often rather high-arching, though usually nearly prostrate in S. Engl.; *angular*, thinly hairy, *with flat faces rough with short tubercles stalked glands and acicles*. The large prickles strong, subequal, confined to angles, mostly declining. L. chiefly 5-nate-pedate. *Lts. long-stalked, and so wide-spread*, opaque, plicate, rather pale green above, *with close white felt* (afterwards becoming grey) *beneath*, doubly sharply dentate-serrate; term. usually ovate-acuminate from nearly entire or subcordate

base. *Pan. long*, rather narrow, and many-flowered, *chiefly ultra-axillary;* branches erect-patent; rachis villous, felted, with many stalked glands about equalling the hairs, and subulate strongly declining prickles, which are hardly distinguishable from the acicles in the upper part, but are stronger lower down. Fl. star-like. *Sep.* glandular, aciculate, ovate-acuminate, *reflexed*. Pet. elliptic, and narrowed below with us (sometimes orbicular in Germany), purplish at first, then white. Stam. white or pinkish, far exceeding the greenish red-based styles. Heaths, hedges, and waste places.

One of our most easily recognised species, usually keeping very distinct in S. Engl., where the pale narrow foliage and very marked armature separate it from all its allies; but in N. Engl. it generally has darker leaves and more unequal prickles, especially on the pan. Lees' *R. Leightoni* seems hardly separable, even as a var. (v. *Brit. Rub.* p. 196).

b. *R. Bloxamianus* Colem. *Journ. Bot.* 1887, pp. 102, 103; *B. E. C. Rep.* 1889, pp. 255, 256. — St. glabrous, or nearly so; large prickles patent; *stalked glands very crowded, with a few stout-based acicles or pricklets intermixed*, all short. *L.* 5-nate and 3-nate, hairy on veins, but *rarely felted beneath. Term. lt. roundly-obovate-cuspidate*. Pan. short, compact. Pet. white. Seems to make some approach towards *R. scaber*. (Derb., Leic., Warw.).

c. *R. sertiflorus* P. J. Muell. ? — St. subglabrous, very like that of *R. radula*, but with broad-based deflexed prickles, and rather more crowded acicles and stalked glands. *L. greyer-felted, or* more frequently only pale green and *softly hairy beneath. Lts. uniformly narrow, tapering very gradually from near the acuminate point to the narrow base, with shallower larger mucronate teeth.* Pan. with patent hairs mostly exceeding the many stalked glands; branches more crowded above, and nearly patent, laxer below, with the lts. of the 3-nate l. narrowed to their base even more remarkably than in the st.-l. Pet. smaller, obovate, bright pink within, externally whitish. Stam. pink, exceeding green styles. It is not without hesitation that I place the Rev. A. Ley's Heref. plant here (v. *B. E. C. Rep.* 1890, p. 293). When fresh, as I saw it in Riggs Wood, Sellack, in Aug. 1891 and 1892, it looks just intermediate between *R. radula* and *R. fuscus*.

51. R. Newbouldii Bab. *Journ. Bot.* 1887, pp. 20, 21 (*R. radula* γ. *denticulatus* Bab. *Man.; Brit. Rub.*). — "St. slightly arching, angular upwards, subglabrous. Prickles unequal, long, slender, conical, patent, from a long compressed base, much exceeding the many short aciculi and setæ. L. 5-nate or 3-nate. *Lts. very finely but doubly dentate, green, and not felted beneath;* term. broadly quadrangular-obovate, cuspidate, subcordate below. Pan. long, its ultra-axillary branches many corymbose patent, its lower branches racemose, falling short of l., its prickles long, slender, declining. *Sep. ovate-attenuate*, aciculate, setose, loosely reflexed; pet. pale pink; stam. greenish white, exceeding the (pink ?) styles." Loxley, nr. Sheffield. Mellis, Suffolk. Unknown to me from these stations; but I have received from Capt. A. H. Wolley Dod beautiful specimens of what appears to be this species, gathered by him abundantly near Malpas, Cheshire.

52. R. ECHINATUS Lindl. *R. rudis* Bab. prius. — *St. strong*, angular and sulcate, *hairy* (often densely), with crowded subequal stalked glands and acicles covering the faces. *Prickles* long, subequal, *nearly patent, from rather narrow bases.* L. 5-nate. *Lts. deeply incise-serrate* or even lobed, *remarkably acuminate and attenuate below*, dark and hairy above, *softly hairy and greenish white-felted beneath;* term. obovate or narrowly elliptic. *Pan. long, narrow, leafy;* rachis aciculate, glandular, hairy, with rather long declining or deflexed prickles; branches mostly short, ascending, axillary. *Sep. with very long and strongly reflexed points.* Pet. long, rather narrow, white or pinkish. Stam. white, exceeding the greenish styles. Fr. large. Bloxam's "var. *microphyllus*" seems merely a small state. Heaths, hedges, and waste places.

Among our most widely distributed and constant species, occurring even on chalk.

53. R. RUDIS W. & N.—*St.* arcuate-prostrate, angular, generally quite *glabrous, rough with* very short tubercles, some short acicles, and *crowded subsessile and shortly stalked glands.* Prickles rather short, but strong, and usually numerous, declining. *L. large,* 3-nate and 5-nate-pedate. *Lts. unequally and very coarsely serrate,* dark green and glabrous or subglabrous above, hairy on the nerves beneath and white-felted when young, afterwards pale green, or more rarely (in sunshine) grey-felted; term. broadly ovate, elliptic or rhomboid, with rounded or cuneate base, and long acuminate point; the lateral in the 3-nate l. usually deeply cleft below. *Pan. broad, with crowded and often interlacing branches, and remarkably slender ped.; rachis and ped.* close-felted, and *densely clothed with very shortly stalked and subsessile glands,* a few longer glandular bristles, and a good many acicles; l. 3-nate, often very large; lower branches distant, erect-patent. *Sep.* ovate or triangular-acuminate, with long points, *patent or loosely reflexed. Pet. small,* oblong, pink. Stam. somewhat exceeding the greenish styles. Woods and bushy places (Derb., Oxon, Kent, Surr., Glost.).

A very strongly-marked distinct species.

54. R. PRÆRUPTORUM Boul. *R. pygmæus* Bab. prius.—St. arcuate-prostrate, glaucous, with unequal acicles, glandular bristles and stalked glands, and a few short hairs. *Prickles* many, *slender, very unequal,* more or less declining, *much compressed, narrow-based;* the largest very long. L. large, 5-nate-pedate and 3-nate. *Lts. coarsely, irregularly, and somewhat doubly crenate-serrate, rather thin and brittle,* green and hairy above, *paler and softly hairy on the veins beneath;* term. broadly obovate-acuminate, cordate or subcordate. *Pan. long,* narrowed above; the axillary branches distant, erect or ascending; *rachis* clothed like st., but far more hairy, and *with very unequal prickles.* Sep. ovate-attenuate, loosely reflexed. Pet. narrowed below, white or pinkish. Stam. white, exceeding styles. Hedges and woods (Norf., Herts, Middl., Kent, Dors., Dev.); apparently very local.

A handsome plant, remarkable for its very unequal prickles on st.-angles and on pan., and its thin brittle leaves.

55. R. MELANODERMIS Focke, *Journ. Bot.* 1890, p. 133. *R. melanoxylon* Bab. *Journ. Bot.* 1887, pp. 21, 22. — St. prostrate, bluntly angular, *subglabrous, purplish, or even blackish* (the colour extending to prickles, petioles, and margins of young l.), the faces striate, rather thickly clothed with subequal glandular bristles, acicles, and stalked glands; the large prickles strong, rather unequal, slightly declining or subfalcate. L. 3–5-nate. *Lts. plicate* (especially when young), rather coarsely but hardly doubly serrate, dark green and hairy above, paler with short shining hairs on the veins beneath; *term. usually truncate-cuspidate or broadly obovate, with long narrow point*, cordate or subcordate; bas. not imbricate; the lateral of the 3-nate l. deeply lobed beneath. *Pan. always remarkably narrow*, usually short, though with flowering branches to its base, rounded at the end, with many short 2–3-flowered branches above, and several long axillary ones below; its 3-nate l. passing into 3-fid and simple bracts; rachis and ped. densely clothed with felt and whitish hairs hiding the fairly numerous stalked glands, the acicles and declining prickles being usually neither many nor strong. Sep. ovate-attenuate, aciculate and glandular, grey-green with white margins, reflexed in fl. and fr. Pet. oval, distant, pinkish or white. Stam. white or pinkish, only slightly exceeding pinkish styles. Heaths, hedges, and wood-borders. From Mid-Dors. to Mid-Hants, frequent; locally abundant, and constant in character.

Easily separated from all allied species by its remarkably dark st., plicate truncate lts., and narrow pan. I have seen nothing that appears to me quite identical from other districts; but a plant of Rev. A. Ley's, from Buckstane, Glost., is certainly *very* near this, and so was one sent me by Mr. Briggs, in 1888, from Egg Buckland, Dev. Indeed, I see nothing to make either of these specifically distinct from *R. melanodermis*.

56. R. COGNATUS N. E. Br. *Engl. Bot.* Suppl. to 3rd ed. (1892), p. 101. "*R. debilis* Boul.?" Bab. *Journ. Bot.* 1886, p. 229.—"*St.* arcuate, 5-gonous, *with flat sides;* prickles small, deflexed from a long compressed base; *aciculi* few, *slender*, unequal; setæ very few, inconspicuous; hairs few or none; l. 5-nate-pedate; *lts.* rather *coarsely crenate-dentate*, pale green and nearly naked beneath; *term. lt. cordate-ovate acuminate;* pan. long, leafy, rather narrow, with short axillary racemose branches; its prickles and aciculi small and slender; its setæ and hairs short, unequal; sep. lanceolate-acuminate, leaf-pointed, patent (?) with fr.; stam. long, exceeding the styles, incurved; 'pet. white.'" "Roadside between S. Budeaux and Honicknowle, Dev.; near Charles Hill, Tilford, Surr.; and Linton Wood, Heref."

I cannot think the plants from these three localities identical. Prof. Babington's description seems to suit the Dev. specimens best. I have seen the other two plants growing in good quantity, and find some difficulty in combining them, notwithstanding a considerable resemblance in the glandular glaucous st., and the rather similar white-flowered pan., and pale green 5-nate l. The Heref. plant has a hairy st., with subequal prickles on the angles, and a good many

subequal short acicles and stalked glands on the faces; Dr. Focke (in *B. E. C. Rep.* 1888, p. 209) has named it *R. fuscus*, which the dried specimens undoubtedly recall, though the living plant looked different enough. The Surrey plant is far more strongly armed, the prickles, acicles and stalked glands being very numerous, unequal, and scattered on the subglabrous st. Its lts. are broader, and remarkably sinuate-dentate; its sep. patent or loosely reflexed in fr.

57. R. Babingtonii Bell-Salt. *Ann. Nat. Hist.* xv. 307; *Journ. Bot.* 1886, pp. 228, 229. — "St. arcuate-prostrate, terete or subsulcate; prickles many, short, declining from a long compressed base; strong short aciculi, as well as setæ and hairs, few; l. 3–5-nate; lts. doubly dentate, opaque and pilose above, pale green and pilose beneath; *term. lt.* broadly obovate-*cuspidate*, subcordate below; *pan.* usually large, *leafy*, with subracemose or nearly simple branches; its prickles few, small, slender; its aciculi and setæ slender, few, except near the top of pan. and branches; sep. lanceolate-acuminate, leaf-pointed, erect-patent with fruit; stam. equalling or exceeding the styles." Apparently not very rare; but I do not understand it.

58. R. scaber W. & N. *Journ. Bot.* 1886, p. 229.—*St.* prostrate, *roundish*, glaucous, *with much short hair* or appressed down, *rough with short stalked glands and scale-like tubercles*. *Prickles short*, stout-based, deflexed or declining, rather scattered. L. 3–5-nate, usually chiefly 3-nate, with a few 5-nate-pedate. *Lts. rather coriaceous*, *sharply* unequally *serrate-dentate*, green and shortly hairy on both sides, harsh to the touch beneath; term. rather broadly ovate or obovate-acuminate (the point usually short), cordate or subcordate, *Pan. chiefly ultra-axillary*, the *upper branches erect-patent*, *few-flowered*, the *lower rather long*, *ascending*, *subracemose*; *rachis and ped.* usually *felted with short hairs, and densely clothed with very shortly stalked glands*, and a few longer ones and scattered acicles intermixed. Fl. small. *Sep. with long point*, erect-patent or loosely reflexed after flowering, greenish with white margin, very glandular and aciculate. Pet. narrow, white. Stam. far exceeding greenish styles. Hedges, &c. Warw., Oxon (very variable), Surr., Hants? Dev.

Distinct enough when typical; but it seems almost as variable as the next, and cannot always be easily distinguished from it.

59. R. fuscus W. & N. — *St.* angular above, usually *densely patent-hairy*, with more or less numerous stalked glands and tubercles hidden in the hair, dull brown, often glaucous. Prickles usually rather short, declining, and only partially confined to the angles. L. mostly 5-nate-pedate. *Lts. thin* and brittle, *very coarsely and unevenly serrate* or incise-serrate, slightly hairy and dark green above, paler and more or less *softly hairy beneath*; *term.* broadly elliptic or ovate *from a rounded base*, gradually tapering into a long point. *Pan.* rather long and lax, *with subequal* few-flowered *erect-patent or divaricate branches*, the lower scarcely if at all longer than the upper, and cymose or pseudo-umbellate; *rachis and ped. densely patent-hairy*, with many stalked glands shorter than the hairs, and

scattered prickles, which are usually slender and declining, but sometimes stout and hooked. Sep. loosely reflexed in the typical plant, brownish grey, with long point, very glandular and aciculate. Pet. obovate, distant, white or pinkish. Stam. white, exceeding the green or reddish styles. Hedges, wood-borders, &c.

Apparently widely distributed and very variable, especially in Heref. Dr. Focke now combines with it as merely a weak hairy form the *R. Loehri* Wirtg. Under it also, I suspect, must come most of the British plants which Genevier and Prof. Babington have been inclined to put to *R. thyrsiflorus* W. & N., a species not yet accepted as certainly British by Dr. Focke, though he is rather disposed to combine our *R. Bloxamii* with it as at all events a nearly allied plant. One form, common all along the southern border of the New Forest (v. *Journ. Bot.* 1890, p. 133), is so marked as to seem to claim varietal rank. It is clearly identical with the Warw. plant referred to as Bloxam's *heteroclitus* (not of Wirtg. and Muell.) in *Journ. Bot.* 1878, p. 208. I propose calling it *nutans*, and should describe its chief distinctive features as follows:—

b. *nutans*.—Lts. remarkably lengthened at the acuminate point, incise-serrate; term. very broadly ovate. *Pan. very lax and narrow above*, usually *drooping*, and *overtopped by the very long narrow floral l.*; the short upper patent or divaricate branches seldom more than 1- or 2-flowered; *sep.* usually *clasping the fr.*; styles purplish. This makes some considerable approach towards the following species, going so far in that direction as perhaps to break down any specific distinction between them.

60. R. PALLIDUS W. & N. *Journ. Bot.* 1886, pp. 308, 309.—Very like *R. fuscus*, but taller and slenderer, with larger, *more straggling pan.* branching unequally and irregularly, larger fl., looser pubescence, larger, paler, narrower thin l. with very coarse crenate-dentate serration, and *slender whitish deflexed compressed st.-prickles*. Term. lt. ovate-cordate, with very long gradually acuminate point. Lowest pan.-branches erect-patent, racemose; those above them patent, pseudo-umbellate; *ped. felted with short hairs*; stalked glands short, with a few longer ones, and many straight acicles. Sep. erect after flowering, reflexed when the fr. is ripe. Pet. white, narrow. Stam. exceeding the usually purplish styles. Chiefly in woods (Yorks., Norf., Warw., Hants, Somers.).

A good deal like *R. viridis* Kalt., which, however, has stronger and more mixed st.-armature, a less straggling pan., with straighter rachis and patent or loosely clasping fr.-sep., and usually broader l. with less coarse toothing.

61. R. LINTONI Focke, *Journ. Bot.* 1887, p. 82. — St. rather weak, nearly prostrate, angular, glaucous, subglabrous, with a good many slender unequal acicles and stalked glands. *Prickles very slender*, rather unequal, nearly confined to angles, declining from small base. *L.* chiefly *3-nate*, with a few 5-nate-pedate. *Lts. rather thick*, flat, *shining* above, hairy and greenish-felted beneath, *very acutely* but more or less doubly *serrate*; term. broadly obovate, suddenly contracted into a long cuspidate-acuminate point. Pan. densely hairy and grey-felted, with many unequal acicles and

stalked glands; its branches mostly simple, erect-patent; the long ped. in the ultra-axillary part overtopping the short primordial fr.-stalk; prickles very slender, declining; rachis usually flexuose. Sep. triangular-acuminate, grey-felted, aciculate and glandular like the ped., ultimately reflexed. Stam. exceeding styles.

A small, well-marked plant; still, I believe, only recorded from the Rev. E. F. Linton's two Sprowston localities, Norf.

(To be continued.)

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# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 279.)

**Trifolium Molinerii** Balb. ex Hornemann, Hort. Hafn. 715 (1815). **1842.** "I found this plant . . . . in 1839 near the Lizard lighthouse."—Rev. W. S. Hore in Phytol. i. 163.

**T. stellatum** L. Sp. Pl. 769 (1753). **1805.** Found 30th July, 1804, by Mr. W. Borrer, "between Shoreham harbour, Sussex, and the sea."—E. B. 1546.

**T. arvense** L. Sp. Pl. 769 (1753). **1548.** "Groweth much amōg the corne."—Turn. Names, D vij, back.

**T. Bocconi** Savi, Obs. Trifol. 37 (1810). **1841.** Edinburgh Catalogue of British Plants, ed. 2. "Found by Messrs. Borrer and Babington [in July, 1839] at Cadgewith, Cornwall."—Phytol. i. 163 (1842). E. B. Supp. 2868.

**T. striatum** L. Sp. Pl. 771 (1753). **1660.** "In all the closes you pass through going from Cambridge to Chesterton Church" (Cambs).—Ray, C. C. 169.

**T. scabrum** L. Sp. Pl. 771 (1753). **1690.** "At Newmarket" (Cambs).—R. Syn. i. 135.

**T. glomeratum** L. Sp. Pl. 771 (1753). **1670.** "Prope Saxmundham in Suffolcia."—Ray, Cat. 305.

**T. suffocatum** L. Mant. ii. 276 (1771). **1794.** "Found wild on the sands about Yarmouth by Mr. Lilly Wigg," 1792. — Linn. Soc. Trans. ii. 357.

**T. strictum** L. Amœn. Ac. iv. 285 (1759). **1847.** Found in July, 1847, by the Rev. C. A. Johns, "between the Lizard Head and Kynance Cove."—Phytol. ii. 908.

**T. repens** L. Sp. Pl. 778 (1753). **1632.** Johns. Kent, 13.

**T. fragiferum** L. Sp. Pl. 772 (1753). **1629.** Johns. Kent, 8.

**T. procumbens** L. Sp. Pl. 772 (1753). **1632.** Johns. Kent, 12.

**T. dubium** Sibth. Fl. Oxon. 231 (1794). *T. minus* Sm. ap. Relhan, Fl. Cant. ed. ii. 290 (1802). **1660.** In Cambs ("T. lupulinum alterum minus").—R. C. C. 166.

**T. filiforme** L. Sp. Pl. 773 (1753). **1724.** About Putney, Blackheath, &c.—Ray, Syn. iii. 331. Distinguished by Buddle about 1710. See Fl. Midd. 82.

**Anthyllis Vulneraria** L. Sp. Pl. 719 (1753). **1597.** "Upon Hampstead Heath neer London . . . . also upon blacke Heath."—Ger. 1061.

**Lotus corniculatus** L. Sp. Pl. 775 (1753). **1597.** "In most fertill fields of England."—Ger. 1022.

**L. tenuis** Waldst. & Kit. in Willd. Enum. ii. 797 (1809). **1816.** "Near Mr. Sloper's farm, not far from Tonbridge. A new species; first found at Hastings, near Bulverhithe."—T. F. Forster, Fl. Tonbr. 86 ("*L. decumbens*").

**L. uliginosus** Schkuhr, Bot. Handb. ii. 412 (1796). *L. major* Sm. (1809). **1632.** Johns. Kent, 29 ("T. corniculatum majus hirsutum").

**L. angustissimus** L. Sp. Pl. 774 (1753). **1800.** "Among the rocks near Hastings. Mr. Dickson."—Sm. Fl. Brit. ii. 795. First found in 1798; see drawing for E. B.

**L. hispidus** Desf. Cat. Hort. Paris. 190 (1829). **1831.** "Cornwall, near the Lizard and near Penzance, H. C. Watson, Esq."—Hook. Fl. Brit. ed. 2, 330. "Found by Mr. J. Woods near the Castle at Dartmouth in June, 1828."—E. B. S. 2823 (1838).

**Astragalus alpinus** L. Sp. Pl. 760 (1753). **1831.** Found, 30th July, 1831, by Mr. Brand, Dr. Greville, and Dr. Graham, in Glen of the Dole, Clova.—E. B. Supp. 2717.

**A. danicus** Retz, Suppl. 53 (1809). *A. Hypoglottis* Auct. **1597.** "Upon Barton hill, fower miles from Lewton in Bedfordshire."—Ger. 1062.

**A. glycyphyllos** L. Sp. Pl. 758 (1753). **1570.** "Ex Angliæ nos litoreis, item mediterraneis procul mari, Londini Serendam curavimus."—Lob. Adv. 402.

**Oxytropis uralensis** DC. Astragol. 68 (1802). **1768.** "Upon Carn-dearg, one of the lower heads of Ben-Sguilert, a high mountain in Glen-creran, in Upper-Lorn . . . . found there by my ingenious friend Mr. Stuart. It has also been discovered at the bay of Farr, on the eastern coast, and in a rocky soil at Cromarty, by Mr. Robertson. See Scotch Magazine for July, 1768, with a figure of it."—Lightf. Fl. Scot. 401 (1777).

**O. campestris** DC. Astr. 74 (1802). **1813.** "Discovered by Mr. G. Don, in the summer of 1812, on a high rock . . . . at the head of Clova, Angusshire."—E. B. 2522.

**Ornithopus perpusillus** L. Sp. Pl. 743 (1753). **1570.** "In marginosis herbidis Grinwicij Regie, ad Tamesim flumē, nō procul Lōdino."—Lob. Adv. 403.

**O. ebracteatus** Brot. Fl. Lus. ii. 159 (1804). **1839.** "Discovered (in April, 1838) on Tresco, one of the Scilly Islands, by Miss White, of that place."—Bab. in Ann. N. H. ii. 349.

**Hippocrepis comosa** L. Sp. Pl. 744 (1753). **1634.** "On the Hils about Bath, and betweene Bath and Marleborow."—Johns, Merc. Bot. 35.

**Onobrychis viciæfolia** Scop. Fl. Carn. ed. 2, ii. 76 (1772). **1597.** "Upon Barton hill, fower miles from Lewton in Bedfordshire."—Ger. 1064.

**Vicia hirsuta** Koch, Syn. ed. i. 191 (1837). **1597.** "Ramping and climing among corne . . . . the herbe is better knowne then desired."—Ger. 1053.

**V. tetrasperma** Moench. Meth. 148 (1794). **1660.** "In the corn as you goe from Hoginton [Oakington] to Huntington roade; and in the woods at St. George Hatley" (Cambs).—R. C. C. 175.

**V. gracilis** Lois. Fl. Gall. 460 (1806). **1839.** "On Barrow Hill, Bath. C. C. Babington."—Fl. Bath, Supp. 74. Bromfield gathered it near Ryde on July 16, 1839: see note on original drawing for E. B. Supp. 2904.

**V. Cracca** L. Sp. Pl. 735 (1753). **1629.** "Aracus sive Cracca major Lob." Hampstead.—Johns. Eric.

**V. Orobus** DC. Fl. France, v. 577 (1815). **1670.** "At Bigglesby [Gamblesby], in the way to Pereth [Penrith] in Cumberland from Hexham," &c.—Ray, Cat. 339.

**V. sylvatica** L. Sp. Pl. 734 (1753). **1634.** "In a wood nigh Bathe."—Johns. Merc. Bot. 76.

**V. sepium** L. Sp. Pl. 737 (1753). **1632.** "*Aracus* Tab. *Galega silvestris* Dod."—Johns. Kent, 29.

**V. lutea** L. Sp. Pl. 736 (1753). **1798.** "The late Mr. Humphrey of Norwich found this plant many years ago on the beach at Orford, Suffolk. . . . . Our specimens were gathered at Weymouth, by the Rev. Mr. Baker and A. B. Lambert, Esq., in August, 1795."—E. B. 481. There are specimens in Herb. Mus. Brit. collected at Glastonbury Tor, 1739 (Herb. Rand), and at Weymouth by Lightfoot in 1774.

**V. hybrida** L. Sp. Pl. 737 (1753). **1670.** "This I sometime found on Glassenbury torre-hill."—Ray, Cat. 316.

**V. angustifolia** L. Am. Ac. iv. 105 (1759), (var. *Bobartii*). **1696.** "On Shotover and divers other places."—R. Syn. ii. 188.

**V. lathyroides** L. Sp. Pl. 736 (1753). **1724.** "Found by Mr. J. Sherard and Mr. Rand on the chalky banks near Greenhithe in Kent."—R. Syn. iii. 321.

**V. bithynica** L. Sp. Pl. ed. 2, 1038 (1762). **1778.** "Ad sepes prope Doncaster in agro Eboracensi, D. Tofield in insula Purbeck."—Huds. ii. 320.

(To be continued.)

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## *SHORT NOTES.*

Rumex Acetosella L. (p. 261). — I can supplement Mr. E. F. Linton's interesting note on this plant by giving the growth of a single tuft during twelve months. In October I planted a tuft which was dug up with a grass from a Suffolk heath; it commenced its growth in November, and seemingly grew the winter through.

In the following October it had covered an area of 37 in. by 28 in., although on one side it had to contend with *Carex ligerica;* on the other three sides there was nothing to interrupt its growth. The soil was one-third ordinary garden soil to two-thirds Redhill sand. The second year so formidable a plant had to be rooted out, and the roots formed a perfect network, as Mr. Linton describes. *Calamagrostis strigosa* is another remarkable plant to spread; specimens planted last January, with an area of, say, three square inches, are now plants 18 in. long by 9 in. wide, and still throwing up advance tufts. It is this, I suppose, that causes the *Calamagrostis* not to flower with me; not so the *Rumex*.—ARTHUR BENNETT.

VACCINIUM INTERMEDIUM Ruthe.—I have been expecting to hear of this plant being found in other habitats than those originally described. It may, however, be of interest to record that I sent a specimen of our plant to Dr. Schumann, asking him to compare it with Ruthe's specimens. This he has very kindly done, and, in addition, sent me a scrap from Ruthe's type, along with a specimen gathered by A. Braun. I was induced to do this by the remarks of Dr. F. A. Lees in the *Record Club Report* for 1884–6, pp. 129–130, where he doubts our plant being that of Ruthe; Miss Smith's careful drawing, and Mr. N. E. Brown's description in *Journ. Linn. Soc.* xxiv. t. 3, pp. 125–8, seemed to me to leave no reason for doubt on the subject.—ARTHUR BENNETT.

RUBUS IMBRICATUS Hort IN WEST FRANCE.—During a few weeks' holiday in Brittany, in July last, I noticed many Rubi which were unfamiliar. Among those familiar to me in Herefordshire and Monmouthshire, *Rubus imbricatus* Hort was conspicuous. I saw it growing in numerous stations; but specimens dried from the following places were submitted by me to Rev. W. Moyle Rogers, and the correctness of the name being confirmed by him, I can speak confidently upon them:—Lehon and La Garraye, near Dinan, Ille et Vilaine; Tonquédec, near Lannion, Cotes du Nord; Les Rochers, near Vitré, Ille et Vilaine. As *R. imbricatus* has hitherto been considered an exclusively British form, this note on its occurrence in West France may be interesting. This bramble is one more link by which the Flora of the west and south-west of our islands is connected with that of the West of France.—AUGUSTIN LEY.

HIERACIUM HIBERNICUM Hanb. — This interesting new form, named and described by Mr. Hanbury on p. 258, has been growing in my garden for the last three years, having been obtained by Mr. S. A. Stewart and myself at the Mourne Mountains station, in July, 1889. The plant was placed in a sheltered border in ordinary soil, and grew freely, and increased in size, although the flowering stem was cut each year on reaching maturity. In cultivation it retained its characteristic *facies*, the only effect of the change of conditions being an increased number of flower-heads, *four* large heads being produced this season, in addition to three small buds which might or might not have attained maturity. In cultivation there is no sign of the recurved habit of the leaves mentioned by

Mr. Hanbury. From *H. argenteum* Fries, which Mr. Stewart and I obtained in several stations in the Mourne Mountains, it is immediately distinguished by its numerous large stem-leaves.—R. Lloyd Praeger.

Potentilla reptans var. microphylla Trattinick (*Rosacearum Monographia*, iv. 80, 1824). — Mr. Arthur Bennett has kindly identified a plant which I recently sent him as the above variety. I gathered it in June last on grassy banks in a disused limestone quarry at Cosgrove, Northamptonshire. In the early summer, the small leaves and flowers, and the closely tufted habit of the plant without runners, give to it somewhat the appearance of *P. verna*, for which species indeed I at first took it; this resemblance is, however, lost later on in the season, though the small size of the leaves and flowers, and the compact habit, still give it quite a distinct facies. Mr. Bennett tells me that he gathered it a few years ago on chalky hillocks in Chippenham Fen, Cambs., and that this is the only other British locality known to him.—H. N. Dixon.

Papaver Rhœas var. strigosum Bngh. — This var. of *P. Rhœas*, with appressed hairs on the peduncle, was recorded during 1891 from a number of localities in the neighbourhood of Northampton. In one locality, upon a piece of waste ground of considerable size, I found a large number of plants of the variety, intermixed with typical *Rhœas*, with here and there a plant of *P. Argemone;* no *P. dubium*. As the var. is certainly not a common one in this neighbourhood usually, I was tempted to suspect a local or temporary cause for the variation. I therefore gathered seeds of the var., which I sowed this spring under glass—a precaution necessary to prevent admixture with the ordinary *P. Rhœas*, seedlings of which are only too common about here. Some of the seedlings thus raised were planted out in the garden, and the rest kept indoors. Of ten plants thus grown only two proved to be the var. *strigosum*, all the rest being typical *Rhœas;* the plants were in all respects, except the peduncles, very similar, the form of the capsule in both type and var. being identical. I am compelled therefore to conclude that the variation is probably only of a temporary kind, dependent on local or other causes. This conclusion is supported by the fact that in visiting the same piece of waste ground this year I was unable to find a single plant of the var., where last year it was so common. By itself this would of course prove nothing, but, taken in conjunction with the above facts, it corroborates, I think, the conclusion drawn from them.—H. N. Dixon.

Chrysocoma Linosyris in Lancashire. — I found this plant this summer in the neighbourhood of Humphrey Head. I do not specify the exact locality for obvious reasons, but have placed a specimen in the Herbarium of the Nat. Hist. Museum. In the postcript to his *Flora of the English Lake District*, Mr. J. G. Baker mentions having "seen a specimen gathered in Furness, near Hampsfield, by Mr. W. Nixon, of Eccleriggs." It is not recorded for Lancashire in *Top. Bot.*—W. C. Worsdell.

Ajuga pyramidalis in the Aran Isles.—Nearly forty years have elapsed since *Ajuga pyramidalis* was first discovered in Ireland by Mr. David Moore, who in 1854 found two plants growing near Kilronan, in Aranmore, the largest of the group of three limestone islands known as the South Isles of Aran. Since the date of Mr. Moore's discovery, Dr. Wright and Mr. H. C. Hart have examined the islands, and published lists of the plants observed; and so recently as June, 1890, Messrs. J. E. Nowers and James G. Wells spent a fortnight in the group, and succeeded in adding no less than forty-two species to its flora.* All of these observers, however, failed in their search for *Ajuga pyramidalis*. It was not to be found either in its old station near Kilronan or elsewhere in the islands; so that when I paid a visit to the Arans towards the end of last May it was with very faint hopes of being able to discover the plant. But though I failed to meet with it near Kilronan, I was fortunate enough to find a single specimen some five miles to the westward, close by the hamlet of Creggacareen. The plant, just then (May 27th) in full flower, grew here half concealed by rank grass in a moist nook of limestone rock facing northward, and at a point not more than 150 feet above sea-level. Though only one plant was found at Creggacareen, it is probable that many others may lurk in similar rock-nooks on Aranmore, and that painstaking search would show that it is not so extremely rare as it appears to be. In the Swiss Alps, according to Willkomm,† *Ajuga pyramidalis* grows in pastures at a mean elevation of 4500 feet; in Scandinavia, according to Hartmann,‡ it is found in shady pastures; while Hooker gives as its British habitat, "mountain woods and streams." It would be of interest to know whether, in Scotland, the species is ever observed to occur in the open, and to what elevation it reaches. On the bare, hot limestone of the Arans, the plant could hardly be expected to occur in open situations. I am happy to be able to add to this note that *Astragalus Hypoglottis* L., another of the rare Aran species, which finds in these islands its sole Irish station, is by no means so scarce there as Messrs. Nowers and Wells seem to consider it. I found the plant distributed, at intervals, over a distance of some five miles, from Killeany on to Kilmurvy, and occurring in one of the stations most abundantly.—N. Colgan.

An Early Evolutionist.—The following interesting note is extracted from the *Atlantic Journal and Friend of Knowledge*, Spring, 1833 (pp. 163–4)—one of the works of that eccentric genius, C. S. Rafinesque:—

"Principles of the Philosophy of new Genera and new species of Plants and Animals.

"*Extract of a letter to Dr. J. Torrey of New York dated 1st Dec. 1832.* . . . . I shall soon come out with my avowed principles about G. and Sp. partly announced 1814 in my principles of

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* See *Journ. Bot.* 1892, p. 180.

† *Führer in das Reich der Pflanzen Deutschlands Oesterreiches und der Schweiz*, Leipzig, 1882.

‡ *Handbok i Skandinaviens Flora*, 9th ed., Stockholm, 1864.

Somiology, and which my experience and researches ever since have confirmed. The truth is that *Species and perhaps Genera also, are forming in organized beings* by gradual deviations of shapes, forms and organs, taking place in the lapse of time. There is a tendency to deviations and mutations through plants and animals by gradual steps at remote irregular periods. This a part of the great universal law of PERPETUAL MUTABILITY in everything.

"Thus it is needless to dispute and differ about new G. Sp. and varieties. Every variety is a deviation which becomes a Sp. as soon as it is permanent by reproduction. Deviations in essential organs may thus gradually become N. G. Yet every deviation in form ought to have a peculiar name, it is better to have only a generic and specific name for it than when deemed a variety. It is not impossible to ascertain the primitive Sp. that have produced all the actual; many means exist to ascertain it: history, locality, abundance, &c. This view of the subject will settle botany and zoology in a new way and greatly simplify those sciences. The races, breeds or varieties of men, monkeys, dogs, roses, apples, wheat, and almost every other genus, which may be reduced to one or a few primitive Sp. yet admit of several actual Sp. names may and will multiply as they do in geography and history by time and changes, but they will be reducible to a better classification by a kind of genealogical order or tables.

"My last work on Botany if I live and after publishing my N. Sp. will be on this and the reduction of our Flora from 8000 to 1200 or 1530 primitive Sp. with genealogical tables of the gradual deviations having formed our actual Sp. If I cannot perform this, give me credit for it, and do it yourself upon the plan that I trace.

"C. S. R."

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## *DARWIN UP TO DATE.*

*Darwin and after Darwin.* By GEORGE JOHN ROMANES, M.A., LL.D., F.R.S. I.—The Darwinian Theory. London: Longmans, Green & Co. 1892. Pp. xiv. 460, figs. 125. Price 10s. 6d.

MR. ROMANES intends this volume "to be merely a systematic exposition of what may be termed the Darwinism of Darwin." Before reading it, the conviction was strong within me that Mr. Darwin's theory did not call for any special exposition other than the splendid original, and the volumes of Mr. Wallace. I was even prejudiced enough to believe that in this case popular expositions did all the harm of second-hand accounts, and conferred little advantage of readability. I may say at the outset that this prejudice has been abundantly sustained by an examination of Mr. Romanes' effort. It is commonly supposed to be easy to refrain from writing books, and this one can only be accounted for by the existence of a book-writing habit. The author promises another volume on Post-Darwinian Questions, and it, if he succeed in making plain his own attitude, will have a certain value to those who have toiled hard in the effort to understand Mr. Romanes'

position. The ordinary brain reels under the combined influences of Mr. Romanes' entangled ideas and remarkable language. I make this avowal of imperfect understanding because it has a bearing on this volume. In common with my brother naturalists, I have read Mr. Darwin's and Mr. Wallace's expositions of their views, and without any very powerful effort of the mind I have succeeded in grasping their teaching; these books were addressed for the most part to naturalists. I have read this exposition by Mr. Romanes of the "Darwinism of Darwin,"—written professedly for the general cultivated reader,—and I do not understand it to be the Darwinism of anyone but Mr. Romanes. I may have unconsciously grown in stupidity; and to eliminate this personal error have performed the experiment of taking a course of Asa Gray's *Darwiniana*, and the fine gold has not become dim. I do not wish to press my "vaunted intellect" upon readers, but merely to show an experiment on the literary qualities of this book, and I shall be surprised if I do not find myself in excellent company.

Let us examine some of the author's methods. At p. 13 we read:—"First of all we must clearly recognise that there are only two hypotheses in the field whereby it is possible so much as to suggest an explanation of the origin of species. Either all the species of plants and animals must have been supernaturally created, or else they must have been naturally evolved. There is no third hypothesis possible; for no one can rationally suggest that species have been eternal." It must be agreed that there are only two main hypotheses in the field, but what is to be said of the position of a man who denies the possibility of a third? Surely possibilities of hypothesis are infinite.

That part of the introduction which deals with the argument for evolution apart from the manner of it,—"the evidence of evolution as having taken place somehow," apart from "the evidence of the causes which have been concerned in the process,"—offered an admirable opportunity for the expounder of Darwinism—a foundation for his structure. It is here that naturalists are in very general agreement, and many of those considered the enemies of evolution by this writer have minds much more open on the subject than he appears to think. But with Mr. Romanes the letter of the injunction is strict, and it must be yea or nay, and whatsoever is less cometh of evil. He lays no such foundation worthy of the subject, but proceeds to erect his structure on the quagmire known as "antecedent grounds." After a deal of fine writing (which the general public knows well how to skip) about superstition, supernaturalism, "the miraculous," fetishism, &c.—which have nothing in the world to do with the argument for evolution, though they certainly inhabit slippery "antecedent grounds"—we are told (p. 17) "to regard it as an *a priori* truth that nature is everywhere uniform in respect of method or causation: that the reign of law is universal; the principle of continuity ubiquitous. Now it must be obvious to any mind which has adopted this attitude of thought that the scientific theory of natural descent is recommended by an overwhelming weight of antecedent presumption, as against the

dogmatic theory of supernatural design. To begin with, we must remember that the fact of evolution—or, which is the same thing, the fact of continuity in natural causation—has now been unquestionably proved in so many other and analogous departments of nature, that to suppose any interruption of this method as between species and species becomes, on grounds of such analogy alone, well-nigh incredible. For example, it is now a matter of demonstrated fact that throughout the range of *inorganic* nature the principles of evolution have obtained."

How would the founders of evolution relish this method of exposition? Fifteen pages before this astonishing passage—and in fact on the second page of his volume—Mr. Romanes is eloquent about "the revolt against the purely subjective methods," the "addiction to *a priori* methods," &c. One is tempted to wonder whether words bear their meaning to this teacher. The precise meaning of "subjective" is frequently missed, and, since it is a favourite word of this writer, it would be well if he studied its import a little more closely. It seems to embrace all for which he has a fine contempt, and the above-quoted passage may be recommended to him for inclusion. He begins with the gaseous statement about fetishism, &c., comes to the admirable platitudes in the first sentence quoted—next to the argument (?) of the "It must be obvious to any mind" pattern, and in the following sentence to the *fact* of evolution, which, by an amazing assumption, is taken for the same thing as "the fact of continuity in natural causation."

He regards the fact of evolution to have been so proved by "analogy alone" that any other hypothesis is "well-nigh incredible." What blind idiots all the naturalists (but one or two) in the early half of this century must have been! What was Robert Brown thinking of, or Bentham before his conversion—if evolution be so easily established! Analogy is all that is needed. Why did Darwin toil? Let us return to Mr. Romanes' analogy of the inorganic world, with its "demonstrated fact" of evolution. "It is no longer possible for anyone to believe"—but really, why quote passages beginning in this way. Mr. Romanes goes on to state that there have been gradual changes of relative positions in oceans, continents and mountain-chains (by-the-bye, he should be more cautious about the want of permanence in continents). That is all—one sentence; geology has shown us that, and we are back to animate nature. That is the whole analogy of the inorganic world! Is change, then, the same thing as evolution in Mr. Romanes' judgment? There may be "an overwhelming weight of antecedent presumption" in favour of the theory of evolution; it is not denied here, and nobody cares; but there is not a little of the same quality residing in this attempt to expound the views of Mr. Darwin. It would be easy to multiply instances—they abound in this book—of this kind of argument, if I may be pardoned for robbing the word of its dignity.

We are not concerned here with the zoological part of the work, the major part, nor is there any attempt here made to consider the evidence in favour of natural selection; these subjects stand or fall by

the works of other men than Mr. Romanes; we are merely concerned with this attempt to present the subject, and with a certain original appendix, namely, that to Chapter V., the botanical part at p. 436. Mr. Romanes here undertakes to answer the objections of Mr. Carruthers, whom he describes as "the principal and the ablest opponent of the theory of evolution," praise which Mr. Carruthers probably relishes much as Mr. Wallace will delight in being introduced to the public by Mr. Romanes as "one of our greatest authorities on geographical distribution" (p. 22). However, it is kindly meant. Mr. Carruthers has certainly kept before the public the fact that, in his judgment, the testimony of fossil plants is not in favour of evolution, but it seems to be assumed that he thereby rejects the whole theory, root and branch. It is one thing to say that the case is not proven, and never can be until certain objections are satisfactorily explained away. This attitude is consistent with the open mind which every scientific man aspires to possess; it is another thing to be esteemed an opponent on all and every ground. This, however, is by the way, and Mr. Romanes is not blamed. He states very fairly, it seems to me, Mr. Carruthers's position, resting on the triple ground that there is (1) no evidence of change in specific forms of existing plants throughout historical times, from the times of ancient Egypt until now, and even from the glacial and pre-glacial period, say, 250,000 years; (2) the absence of generalised forms among the earliest plants with which we are acquainted; and (3) that the Dicotyledons, which first appear in the Cretaceous rocks, appear there suddenly, without any forms leading up to them, notwithstanding that we know very well the extensive flora of the underlying Wealden.

How does Mr. Romanes answer these objections? He begins by saying that there is not much difficulty with regard to those in the second category; there might be a difficulty if we took a very erroneous view of organic evolution, &c., and "of course we may wonder why still lower down in the geological series we do not meet with more generalised (or ancestral) types; but this is the difficulty No. 3, which we now proceed to examine." Really one must ask, why should Mr. Romanes take the trouble to state the difficulty, if he is not to answer it? Let us see how he proceeds:—"Concerning the other two difficulties, then, the only possible way (Mr. Romanes is an authority on the limits of possibility all through his book) of meeting that, as to the absence of any parent forms lower down in the geological series, is by falling back—as in the analogous case of animals—upon the imperfection of the geological record." That is how he "proceeds to examine" difficulties Nos. 1 and 3, which latter, he says, includes 2. There is much besides, and a deal beside. Here is an example of the circular method of argument:—"The mere fact that Dicotyledonous plants, where they first occur, are found to have been already differentiated into their three main divisions, is in itself sufficient evidence, on the general theory of evolution, that there must be a break in the record as hitherto known between the Wealden and the Chalk. Nor is it easy to see how the opponents of this theory can prove their negative by

furnishing evidence to the contrary." It dawns on this author, in the next sentence, that "such might justly be deemed an unfair way of putting the matter"; would that it had dawned upon his mind that it is nonsense, and that he had saved reviewers the disagreeable necessity of saying so. It is natural enough for Mr. Romanes to comfort himself with the reflection that the geological record, the blessed imperfections of which are a safe haven for him, contains "numberless other cases" testifying to connecting links. We do not understand that Mr. Carruthers set about denying this; he contented himself with urging objections, and the thing is no more in the dispute than the rotundity of the earth.

Enough has been said to show the style of argument with which this exponent of "the Darwinism of Darwin" seeks to satisfy the British public. This book is surely the chief penalty of the greatness of Mr. Darwin's name. It is no part of my task to say one word here on the merits of this general question,—Darwin is happily not to be judged by Romanes,—but merely to show how this author has acquitted himself in his unauthorised effort to expound the position of that great man.

I conclude by giving one final example,—this time it combines the author's taste with his critical faculty,—from p. 412:—"All nature has thus been transformed before the view of the present generation in a manner and to an extent that has never before been possible; and inasmuch as the change which has taken place has taken place in the direction of naturalism, and this to the extent of rendering the mechanical interpretation of nature universal, it is no wonder if the religious mind has suddenly awakened to a new and terrible force in the words of its traditional enemy—Where is now thy God?" This is the proper moment for the lecturer to stop and imbibe a glass of water, and I am much inclined to leave Mr. Romanes with the cheers of the groundlings ringing in his ears; but I cannot refrain from an apt quotation, which I find in Asa Gray's *Darwiniana*, at p. 234:—"It is a singular fact that, when we can find out how anything is done, our first conclusion seems to be that God did not do it. No matter how wonderful, how beautiful, how intimately complex and delicate has been the machinery which has worked, perhaps for centuries, perhaps for millions of ages, to bring about some beneficent result, if we can but catch a glimpse of the wheels its divine character disappears."

G. M.

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## *ARTICLES IN JOURNALS.*

*Ann. Sciences Nat.* (xiv. 5 & 6: Aug.). — M. Gomont, 'Monographie des Oscillariées (9 plates). — P. van Tieghem, 'Deuxième Addition aux Melastomacées.' — (xvi. 1: Sept.). E. Aubert, 'Recherches physiologiques sur les plantes grasses.'

*Bot. Centralblatt.* (No. 35). — E. Wilczek, 'Zur Kenntniss des Baues der Frucht und des Samens der Cyperaceen.'—A. Rothpletz, 'Die Bildung der Oolithe.'—(No. 36). P. Kunth, 'Zur Bestäubung

von *Calla palustris*.' — (Nos. 37–39). F. G. v. Herder, 'E. Regel' (with bibliography).

*Bot. Gazette* (Aug. 15). — A. F. Foerste, 'Relation of fall to spring blossoming plants.'—E. J. Hill, 'Flora of Chicago.'—N. L. Britton, 'The Plea of Expediency.' — J. M. Holzinger, '*Amarantus crassipes*' (1 plate).—Mrs. W. A. Kellermann, 'Variations of Strawberry leaf.' — D. M. Mottier, 'Embryo sac of *Arisæma triphyllum*' (1 plate).

*Botanical Magazine* (Tokio) (March 10). — R. Yatabe, *Senecio Makineanus*, sp. n. — (Ap. 10). K. Okomura, *Ptilota dentata*, sp. n. — (May 10). R. Yatabe, *Machilus Thunbergii* var. *japonica* & *Euonymus lanceolatus*, sp. n.—(June 10). S. Hori, 'Some Japanese Uredineæ.'—(July 10). R. Yatabe, *Calanthe Kirishimensis*, sp. n.—(Aug. 10). R. Yatabe, *Polygonatum amabile*, sp. n.

*Bot. Zeitung* (Aug. 19–Sept. 9). — W. Benecker, 'Die Nebenzellen der Spaltöffnungen.'

*Bull. Soc. Bot. France* (xxxix.: Comptes rendus 3: Sept. 1).—E. Prillieux, 'Sur une Maladie des Champignons de couche.'—Id., 'Le Parasite du siegle enivrant' (*Peziza temulenta*). — F. Heim, *Vateriopsis* (nov. gen. Dipterocarp. = *Vateria seychellarum* Dyer).—O. Debeaux, *Mentha Amblardii* (*hirsuto* × *rotundifolia*).—A. Chabert, 'La Conservation des Herbiers.' — E. Mandon, Plantes de Montpellier. — F. Camus, 'Excursion bryologique (Forêt de Montmorency).'—B. Chodat, '*Polygala* d'Europe.'—J. Godefrin, 'Canaux résineux de la feuille du sapin.' — X. Gillot, 'Anomalies florales de *Fritillaria imperialis*.' — D. Clos, 'La durée des plantes comme caractère distinctif.'

*Bull. Torrey Bot. Club* (Aug.).—G. E. Cooley & C. E. Cummings, 'Plants of Alaska and Nanaimo.'—J. W. Eckfeldt, 'Rare N. American Lichens.'—C. DeCandolle, 'Piperaceæ Bolivianæ.'

*Gardeners' Chronicle* (Sept. 3).—*Disa Cooperi* (fig. 45).—*Nemesia strumosa* (fig. 48).—Hybrid between *Ribes nigrum* and *R. Grossularia* (fig. 46). — (Sept. 10). *Kalanchoe marmorata* Baker, *Habenaria carnea* N. E. Br., spp. nn. — C. T. Druery, '*Athyrium Filix-fœmina revolvens*' (fig. 51).—(Sept. 17). *Bulbophyllum O'Brienianum* Rolfe, *Cattleya Batalini* Sander & Kränzl, spp. nn. — (Sept. 24). *Agapetes Mannii* Hemsl., sp. n. — N. E. Brown, 'Revision of *Caralluma*' (*C. longidens*, *C. tuberculata*, spp. nn.).

*Journal de Botanique* (Aug. 1–16).— Drake del Castillo, *Rutaceæ* of Tonkin.— J. Huber & F. Jadin, 'Une nouvelle Algue perforante d'eau douce' (*Hyella fontana*: 1 plate).—E. Belzung & G. Poirault, 'Les sels de l'*Angiopteris evecta*.'

*Kew Bulletin* (Sept.). — 'Caraguata Fibre' (*Bromelia argentina* Baker, sp. n.). — 'Decades Kewenses' III. (*Dizygotheca* N. E. Br., gen. nov. Araliacearum).—'New Orchids: Decade 3.'

*Oesterr. Bot. Zeitschrift.* (Sept.). — 'Neuere Bestrebungen auf dem Gebiete der botanischen Nomenclatur.'

## *BOOK-NOTES, NEWS, &c.*

Dr. Trimen, who is now in England, has received the sanction of the Government of Ceylon to proceed with the publication of the Flora of that island, upon which he has been for some time engaged. The work will be published in parts by Messrs. Dulau & Co., and will form 2 vols. 8vo, and be illustrated by a 4to atlas of 100 coloured plates from drawings by the native Singhalese artists attached to the Peradeniya Gardens. The first part, containing the whole of the Thalamifloral Polypetalæ, is now in the press. The book is more especially designed for use in the Colony, and enters into more local detail than has been the practice in the Colonial Floras hitherto published by Government. These have been, unavoidably, for the most part written rather from the standpoint of the herbarium-botanist than for use in the field, and the local information they afford has been quite insufficient for the wants of residents, however useful the diagnoses may be to botanists generally. The price of the first part, with 25 coloured Plates, will be £1 1s. 0d.; that of the whole book (in one payment) £3 13s. 6d. Subscribers' names will be received by Messrs. Dulau & Co., 27, Soho Square, London, W.

We are glad to see that a movement for the earlier opening of Kew Gardens has been set on foot, and trust that it will now be carried to a successful issue. As was pointed out by the Editor of this Journal in 1878 (p. 128), the official objections to the opening are extremely feeble. The scientific and experimental work of Kew is carried on in the Herbarium, the Jodrell Laboratory, and the parts of the Gardens to which the general public are under no circumstances admitted; and there is no more reason for closing the Gardens during the morning than for shutting up the public parks during a similar period. The matter is dealt with at length in *Nature Notes* for October. We are sorry to learn that, in spite of Mr. Plunket's assurance (see p. 191), the summer has been allowed to pass without the appearance of the long-delayed and much-needed *Guide* to the Gardens.

The *Guide to the Metropolitan Railway Extension to Chesham*, &c. (2d.), has a novel feature in a "list of wild flowers and indigenous plants found within a radius of six miles of Pinner," which "has been prepared with great care by a botanist of note, Mr. John W. Odell, of Barrow Point Hill." Mr. Odell should revise the proofs of the next issue, in order that he may not be credited with the invention of such names as as Bidens cerauna, Daphn, Buttomas, Blecknum, Lysimachia vemorum, Bryonia diocia, Epipactis lalifolia, Witlow grass, Orphine, and the like. We would also suggest some kind of arrangement in the list. Only one grass is mentioned, and there are no Cyperaceæ. There are occasional notes, some of which are of an admonitory kind, as when we are told that *Agrimonia Eupatoria* "is a small yellow-flowered plant, used medicinally, and must not be confounded with the next mentioned" —*Eupatorium cannabinum*. Did any one ever confound them? Still it is gratifying to find a list of plants in a railway guide, and if,

instead of a thoroughly well-known district, such places as Chenies or Chesham had been selected for investigation, a useful result might have been attained.

Mr. F. M. Bailey's *Contributions to the Queensland Flora* (No. V.) contains, as usual, descriptions of several new species, and an interesting note on *Pleiogynium Solandri* Engler, the "Burdekin Plum" of Queensland, to the synonymy of which, as given by Engler (DC. *Mon. Phan.* iv. 255), Mr. Bailey adds *Owenia cerasifera* F. M. (Benth. *Fl. Austr.* i. 386).

A correspondent writes:—"I observe the following report in *The Irish Naturalist* for the present month:—'July 30th. Excursion to Benevenagh . . . . There was keen competition for two prizes, one for the largest collection of flowering plants, *the other for the rarest twelve flowering plants collected*.' Is not this method of botanizing one of the chief causes why several of our rarer plants are on the verge of extermination? On this very mountain some species have their only locality for the eastern part of Ulster. One (*Saxifraga oppositifolia*) is almost, if not quite, extinct. Others recorded from there have not been recently observed. Such competitions are much to be deplored. If they are necessary for the encouragement of botanical study, let them be carried out in some district where a few lingering alpines are not crying out for mercy. But, whether there is such a necessity or not, there is a far stronger one that all right-minded botanists should observe, that of protecting our rarer plants, and to them I appeal." There is, we fear, only too much cause for our correspondent's remarks. A few days since we saw in the possession of one collector some twenty or thirty fine specimens of *Orchis purpurea*, collected this year in Kent. With introducers on one side, and exterminators on the other, our indigenous flora seems likely to fare badly.

Dr. Britton, in the *Botanical Gazette* for August, explains that he did not publish Dr. Asa Gray's last letter on nomenclature (see p. 254), because it "did not come to [him] as editor of the *Bulletin*," and because "[he] did not realize that it was intended for publication, and [does] not think that it was." Moreover, he sent the letter to Cambridge, and accepted "a copy of it in exchange"; and "certainly never had any right to publish it after it had passed from [his] possession." These reasons may or may not be considered satisfactory, but we think all botanists will regret that Dr. Gray's last utterances on a subject in which he is known to have taken a special interest were not made public.

The first number of the new issue of *Grevillea* (Sept.) contains papers on new British and Exotic Fungi by Mr. Massee (in which two new genera, *Thwaitesiella* and *Dendrographium*, are established); and a similar paper on British Algæ by Mr. Batters, in which are brought together summaries of articles printed in this Journal and elsewhere. There are useful bibliographies for different branches of cryptogamic botany, and the new series in many respects is a great improvement on its predecessor. The typographical arrangements might be much improved, and the plates are not satisfactory.

## *OBITUARY.*

Burton Mounsher Watkins died at his residence, Treaddow, near Ross, Herefordshire, on the 30th of July. He was in his seventy-sixth year, having been born in December, 1816, in Liverpool. Very early in life his father removed to London, where young Burton Watkins received his education at a school in Mount Street, Grosvenor Square. In London his inherent love of plants first showed itself under somewhat unfavourable circumstances. He used to relate in after years how, when he was a small boy, he pushed himself with difficulty through some railings at Guy's Hospital to obtain some buttercups which were flowering inside. The recollection of his intense childish delight in possessing them did not pass away till old age. Ill-health obliged his father to migrate to Monmouth, when the subject of our notice was about fifteen years old; and in the neighbourhood of Monmouth, and the adjoining parts of Herefordshire, he spent the remainder of his life. His father, in the intervals of his business as a shoemaker, devoted himself to entomology, and is believed to have been the first to capture the scarlet tiger, *Hypercompa dominula*, in Monmouthshire. These expeditions first brought out young Watkins's inborn taste for Natural History, and he soon made Botany his especial study. This study he pursued with the most steady and painstaking perseverance; his botanical education being entirely self-acquired, from such books as he could borrow. His habit was to make laborious analyses of these in manuscript. About the year 1844 he began collecting plants on the Doward Hills, in Herefordshire, and in 1845 discovered there *Kœleria cristata*, a grass which has only twice since that date been noted in the county. Soon after 1845, the discovery by him of *Hutchinsia petræa* upon the same hills brought Watkins under the notice of Mr. R. M. Lingwood, then residing at Lyston. He visited the Dowards in company with Mr. Watkins, and gave him much encouragement and help in various ways. Professor Babington was at this period (1847 to 1856) in the habit of visiting Mr. Lingwood at Lyston, and joined in affording help and encouragement to the young naturalist. Thus encouraged, Burton Watkins steadily pursued his favourite subject, and became before long an accurate and accomplished botanist. He proceeded to study the Mosses and Hepaticæ, and was a correspondent of Dr. Braithwaite and the late Rev. J. C. Crouch; and he gained an extensive acquaintance with the critical forms of the genus *Rosa*, and to a less extent with those of the Rubi. Of all these, the Hepaticæ formed his favourite study, and were the last to be relinquished when infirmity and the loss of accurate eyesight obliged him to give up work with the microscope. Watkins's discovery of *Riccia sorocarpa* Bischoff in 1872 upon the Dowards brought him into correspondence with Dr. Carrington and Mr. Pearson; and with the latter especially he maintained a correspondence for many years. We believe that he contributed considerably, through his careful observations, to the knowledge of the life-history of the curious *Riccia natans* L.

Mr. Watkins was too modest to bring the results of his work willingly before the public. He contributed some notes on the flowering of plants at Ross to the *Phytologist* for June, 1861 (v. 188); and published some notes on the flora of the Frome and Bromyard districts of Herefordshire in the *Transactions of the Woolhope Field Club* for 1868 (pp. 164–7). In 1881 he was induced to put on record a summary of his work on the Doward Hills, in an able paper under the title of a "Florula of the Dowards," published by the Woolhope Field Naturalists' Society, of which he was elected an honorary member in 1886. The *Flora of Herefordshire* was published for the same Society in 1889; and the frequency with which Mr. Watkins's name occurs as an authority for records in that work attests his industry. About 1890 his health began to fail, and he was obliged to forego entirely both his field work and his microscope.

A man of very retiring and modest disposition and abstemious habits, Mr. Watkins was not one to be widely known; but he was greatly valued by the few who knew him well. An extensive reader, he was also an acute observer, not only of plants, but also of men. During nearly fifty years he was employed as relieving officer, and for a portion of that time as school attendance officer, in the neighbourhood of Ross. He performed these onerous and too often thankless duties faithfully and well, and has become in his own neighbourhood a pattern of what such officers ought to be. He gained, during their discharge, a knowledge of the poor, their sayings and their ways, possessed by very few. He was a faithful and generous friend, never thinking any trouble too much which could help another in his work.

AUGUSTIN LEY.

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WE in Australian science have sustained a sad loss through the sudden death of Mr. ROBERT FITZGERALD, F.L.S., which took place on August 13th, at his residence, Hunter's Hill, Sydney, in his sixty-second year. I was not even aware of his illness. I found him through many years a sterling friend, and his orchidographic researches, supported by a rare ability in plant-drawing, are beyond all praise. The greater number of Australian Orchids are done by him for his superb work, but it is to be lamented that he did not live to complete it. His botanic career commenced publicly in 1869, when he had the enviable opportunity, together with Mr. Charles Moore, to visit Lord Howe's Island, and when for the first time the almost entirely endemic vegetable treasures of that isolated spot between New Zealand and Norfolk Island became revealed. He then ascended there the very dangerously steep Mt. Lidgbird, which rises to 3000 feet, and it was on its declivity that the 40 ft. high *Dracophyllum Fitzgeraldi* was discovered; several Orchids, an *Hileiocus* and several other plants bear his name. To the study of Orchids he was specially led by Darwin's work, and his observations on the fertilisation and hybridisation of numerous Australian species are highly important. He went purposely to West Australia on a lengthened tour, to study the largely unique Orchid flora there in the living state; but the main fields of his researches were in New South Wales.

FERD. VON MUELLER.

# ON *HOLOSCHŒNUS* LINK.

By C. B. Clarke, F.R.S.

R. Brown (*Prod.* 1810, pp. 221, 222) split the genus *Scirpus* as it then stood into two, on a single differential character, viz., *Scirpus*, "Setæ hypogynæ obviæ"; *Isolepis*, "Setæ nullæ." It has been found, since 1810, that in numerous species of R. Brown's *Scirpus* the hypogynous bristles are not rarely very small, reduced or subobsolete; very rarely are they so completely absent that no indication of them can be microscopically detected; they are (probably) rudimentary petals and stamens, in the (geologic) course of disappearance, and some traces of them perhaps could in most instances be discovered by a study of the development of the flower. They are, however, frequently so nearly obsolete that their value for practical separation of genera is far from absolute; hence both Boeckeler and Bentham have reduced *Isolepis* R. Br. back to *Scirpus*, and nearly all modern authors have accepted this reduction.

Nevertheless, R. Brown was not far wrong. The absence of the hypogynous setæ in *Isolepis* appears to be absolute, nor do I ever find (accidentally) any trace of them present. The two large "squamæ laterales" noted by Bentham (Benth. et Hook. *Gen. Pl.* iii. p. 1051) as found in one single collection of *Scirpus membranaceus* Thunb. (*Isolepis* Nees) are so very unlike the ordinary setæ hypogynæ of *Cyperaceæ* that they are not supposed by Bentham to be homologous with setæ hypogynæ. Indeed, the ultimate result is that, for the subdivision into genera of the great mass of species now called *Scirpus*, any better subgenus than *Isolepis*, and any better character than R. Brown's, still remain to be discovered.

As a split off from the then-accepted genus *Isolepis*, Link (*Hort. Berol.* i. (1827), p. 293) founded the genus *Holoschœnus;* in its short character he stated, "Setæ hypogynæ nullæ"; and he appended to the character the remark, "Genus inflorescentiâ distinctum." To this genus would belong *Scirpus Holoschœnus* and *S. Romanus* Linn. *Sp. Pl.* 72, *S. globiferus* Linn. f. *Suppl.* p. 104, and *Isolepis Thunbergii* Schrad. in *Goett. Anz.* 1821, heft 3, p. 2068. Though the genus would appear from Link's words to be a weak one, and though it has been sunk into *Isolepis* (and finally into *Scirpus*) by modern authors, it was accepted and specially investigated by the elder Reichenbach. He (in his *Fl. Germ. Excurs.* i. (1830), p. 75, and in *Flora*, xiii. (1830), band 2, pp. 489–501 and 517–521) discussed the genus, added new species, and concludes, *Flora* (1830), p. 519, "Die Gattung *Holoschœnus* (Dalech.) Lk. ist uebrigens eine der allernatuerlichsten unter den Scirpinen," &c. He states also that he studied several of the "species" alive in his botanic garden. Reichenbach in these labours was mainly employed in species-making, on characters of very secondary value, and he says nothing about the setæ; in his *Fl. Excurs.* he places *Holoschœnus* among the genera "calyce nullo," *i. e.*, it had no setæ.

Leaving out of our present consideration the Cape plant (which differs a little, and is accorded specific rank by Boeckeler), Reichen-

bach admitted the three old Linnean species (under new names), published two more "intermediate" species, and issued under MS. names one or two more species. The whole of these are reduced to *S. Holoschœnus* Linn. by Boeckeler—I think rightly. So also Boswell Syme; the only English locality known to me is Braunton Burrows, in Devon, where the plant is *S. Holoschœnus* Linn., nearly *typical*.

It is not the object of this paper to criticise "species" or "subspecies" of *Holoschœnus* in detail. The case is one that occurs in perhaps one-third of our species of well-known wild plants. We have first the standard plant; then we have the *S. Romanus* Linn. smaller, dried up, with few small spikes on short rays; then we have *S. globiferus* Linn. f. (also a southern form), with a compound evolute inflorescence, but smallish spikes (sometimes as many as eighty). Under these three forms, perhaps three-fourths of the material in the large herbaria can be sorted out. The remaining one-fourth provides an almost boundless scope for the invention of new "species"; or "hybrids," in the more modern style. I would once more protest against such plants being recorded as "hybrids." *First*, because there is no experimental proof that they are hybrids, or from what parents they are derived; I do not see why many of them may not be "varieties" (possibly even from seed in a self-fertilised flower), due to soil, climate, &c. *Secondly*, because, within the range of variation within which fertilisation is nearly perfect, the results of intercrossing between varieties and "subspecies" should be called only crosses. The study of "hybrids" in the Darwinian sense between well-separated species which (usually) hybridise only with difficulty has led to great results; and experiments in this sort of hybridism appear to me much more likely to prove valuable than labours in the fine separation and distinguishing of species. But I doubt if observations or even experiments in botanic intercrossing of very closely allied (dubious) wild species are very promising of theoretic results; so much has been done in this direction by gardeners. I do not think it an advisable use of the term to call a half-bred Lincoln sheep a hybrid, though we actually know in this case that it was a cross between two distinguishable subspecies.

In systematising, I would certainly follow Boeckeler and others in treating all this *Holoschœnus* as one species, *i. e.*, I think it would be a waste of time for any botanist who attempts general work to trouble himself with the forms of "*Romanus*," "*globiferus*," &c., and their bewildering series of connecting forms; I do not say that from economic or other causes it may not be worth while for somebody to study the group.

Reichenbach, in *Ic. Fl. Germ. et Helv.* viii. (1846), pp. 44, 45, tabb. 316–318, figg. 736–741, again takes up *Holoschœnus*, admitting three species in the German Flora. He now gives, as a character (in the short diagnosis of the genus), "Setæ hypogynæ 4–6." In each of his three tabb. he gives analysis of the flower; in tab. 316, he shows six setæ about twice as long as the nut; in tab. 317, he shows six setæ rather exceeding the nut; in tab. 318, he shows four setæ nearly as long as the nut. These "setæ" are all linear

"deorsum scabræ"; the smooth three filaments are also shown. In the diagnostic specific character of one of the species Reichenbach gives "nuce setas æquante"; and in the descriptions of each of the three plates he says he depicts "nux cum setis."

Recollecting the minute and long attention that Reichenbach had paid to *Holoschœnus*, I think these statements *with figures* of the setæ are the most extraordinary blunder I can call to mind in the whole extent of systematic botany. I have no doubt that the setæ are invariably and absolutely wanting; I have never found a seta even one-tenth the length of the nut in any specimen of *Holoschœnus*, and I have examined many of the *ipsissima* examples of Reichenbach. It is impossible to suppose that Reichenbach did not know a seta from a filament: his figures show that he did; moreover, he must have made some examination, for he distinguishes one of his (very bad) species by its "nuce setas æquante," whereas in his other two species the nut was shorter than the setæ.

Botanists subsequent to Reichenbach's *Ic. Fl. Germ.* have been able to make nothing of the puzzle. No one of them (unless the observation has escaped me) anywhere says that he has found (ever so small) a seta in any "species" of *Holoschœnus*. Parlatore (*Fl. Ital.* ii.) says, "Setæ nullæ," but cites Reichenbach's figures without comment. This is remarkable, as Parlatore is exhaustive almost to tediousness; his silence I interpret to mean that he did not know what to say. Boswell Syme gives "Hypogynous bristles none ('4 to 6,' Reich.)." Grenier et Godron, Sir J. D. Hooker, simply say, "Setæ 0." Cosson et Durieu, *Explor. Alger.* ii. p. 236, say, "Setæ nullæ," but cite Reichenbach's figure without comment.

The only explanation that I have been able to conceive is that Reichenbach had his plates of *Holoschœnus* done some time, perhaps years, before they were published; that his artist was a much less able botanist than himself; that when subsequently Reichenbach "went to press" he was hurried, and worked from the plates, forgetting that the analyses were not, or might not have been, his own.

To sum up, no trace of a seta is (as I believe) ever to be found in *S. Holoschœnus* Linn. But there is an example of it, in the Calcutta Herbarium, believed to have been collected in the West Himalayas or North Cabul (but the habitat rather dubious), in which there are two (nearly lateral) squamæ, longer than the nut, one broader than the other. These are doubtless homologous with the two squamæ whose (occasional) presence alone separates the genus *Hemicarpha* (a bad genus) from *Scirpus*. These two squamæ (once seen) in *S. Holoschœnus* would doubtless be considered by Bentham (as the similar and similarly placed two squamæ in *Scirpus membranaceus*, once seen) as bracteoles (vorblaetter). I do not so regard them; I believe they are homologous with the setæ (as I attempted to show the Linnean Society two years ago). But, whatever they are, they are totally unlike the setæ figured by Reichenbach in his three plates of *Holoschœnus*, nor could Reichenbach ever have seen the Calcutta specimen, which alone possesses these "lateral squamæ."

# SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Continued from p. 296.)

### † † † Calyx aut angulatus aut teres.

#### ‡ ‡ Folia profunde lobata.

103. S. Napæa Cav.; Sims, Bot. Mag. t. 2193; DC. Prod. i. p. 466. *Napæa lævis* L. Mant. ii. p. 435. *N. hermaphrodita* L. Spec. 686.

Hab. United States. Virginia! Pennsylvania!

104. S. jatrophoides L'Herit. Stirp. i. p. 117, t. 56; DC. Prod. i. p. 466. *S. palmata* Jacq. Ic. Rar. iii. t. 547.

Hab. Peru!

105. S. ricinoides L'Herit. Stirp. i. p. 115, t. 55; DC. Prod. i. p. 466.

Hab. Peru.

106. S. oligandra K. Schum. *l. c.* p. 321.

Hab. Bolivia, *Mandon*, No. 818!

107. S. triloba Cav.; Jacq. Hort. Schœnb. ii. t. 142; DC. Prod. i. p. 466.

Hab. Cape! Abyssinia!

108. S. Hookeriana Miq. in Pl. Preiss. i. p. 242; Benth. Fl. Austral. i. p. 197. *S. leiophloia* Miq. in Pl. Preiss. i. p. 241.

Hab. W. Australia!

#### Species sectionis incertæ.

##### * Americanæ.

109. **S. Jamesonii**, n. sp.—Caule erecto ramoso tereto superne albo-furfuraceo vel albo-tomentoso, foliis petiolatis ovatis acuminatis plus minusve acute lobatis basi cordatis irregulariter serratis discoloris supra pilosis subtus albo-tomentosis, floribus ad apicem pedunculorum glomeratis pedunculis axillaribus longis, petalis obovatis calyce multo longioribus, sepalis ovatis acuminatis, carpellis 12–15 cuspidatis 1-spermis.

Hab. Ecuador. Prov. of Cuenca ad 6000 ft., *Jameson*, No. 104!

Leaves 2–4 in. long; petals $\frac{1}{2}$–$\frac{2}{3}$ in.

Has somewhat the appearance of a *Malvastrum*.

110. **S. chachapoyensis**, n. sp. — Caule ligneo erecto, foliis oblongis vel ovatis acuminatis basi cordatis vel subcordatis petiolis furfuraceis supra fere glabris subtus pubescentibus, floribus paniculatis axillaribus pedunculis furfuraceis gracilibus ad vel infra mediam articulatis, petalis bilobis calyce multo longioribus, carpellis 5.

Hab. Peru, nr. Sesuya, Prov. Chachapoyas. *Mathews*, No. 3049!

Leaves $2\frac{1}{2}$–4 in. long; petioles $\frac{3}{4}$–1 in.; petals nearly $\frac{1}{2}$ in. long.

111. S. Schmitzii Turcz in Bull. Soc. Nat. Mosc. 1863, p. 565.

Hab. Mexico.

112. S. setifera Presl, Reliq. Haenk. ii. p. 105.

Hab. Mexico.

113. S. VENUSTA Schl. in Linnæa, xi. p. 365.
Hab. South Mexico.

114. S. COLLINA Schl. in Linnæa, xi. p. 364.
Hab. South Mexico.

115. S. COSTATA Schl. in Linnæa, xi. p. 365.
Hab. South Mexico.

116. S. KUNTHIANA Presl, Reliq. Haenk. ii. p. 106.
Hab. South Mexico.

117. S. BIHAMATA St. Hil. et Naud. in Ann. Sc. Nat. Ser. 2, xviii. p. 54.
Hab. Brazil. Minas Geraes!

118. S. VERRUCULATA DC. Prod. i. p. 473. *S. arguta* Fisch. in Link, Enum. ii. p. 206.
Hab. Brazil.

119. S. SEMIDENTATA St. Hil. et Naud. in Ann. Sc. Nat. Ser. 2, xviii. p. 51.
Hab. Brazil.

120. S. MICRANTHA Schrk. in Syll. Ratisb. ii. p. 72.
Hab. Brazil.

121. S. QUATERNATA Schrk. in Syll. Ratisb. ii. p. 73.
Hab. Brazil.

122. S. BETULIFOLIA Schrk. in Syll. Ratisb. ii. p. 74.
Hab. Brazil.

123. S. ANGULATA Vell. Fl. Flum. vii. t. 11.
Hab. Brazil.

124. S. SUBSESSILIS Turcz. in Bull. Soc. Mosc. 1858, p. 199.
Hab. Brazil.

* * Malayana.

125. S. ZOLLINGERIANA Miq. Fl. Ind. Bat. i. pt. 2, p. 141.
Hab. Java.

* * * Australiensis.

126. S. HOLTZII F. Muell. in herb.
Hab. Australia. Port Darwin!

I have been unable to find any published description of this species, and the material at my disposal is but scanty.

*Species exclusæ.*

*Sida*
*abutilifolia* Moench. = *Abutilon Avicennæ* Gaertn.
*abutiloides* Jacq. = *Abutilon Jacquini* Don.
*Abutilon* L. = *Abutilon Avicennæ* Gaertn.
*abyssinica* Dietr. = *Abutilon* sp.
*acaulis* Cav. = *Malvastrum Cavanillesii* A. Gray.
*acerifolia* Garcke = *Abutilon Ochsenii* Phil.
*acerifolia* Lag. = *Abutilon acerifolium* Schl.
*acerifolia* Medic. = *Hibiscus Solandra* L'Herit.
*acerifolia* Zucc. = *Anoda hastata* Cav.
*acuminata* R. Br. = *Abutilon longicuspe* Hochst.
*acutangula* Steud. = *Abutilon angulatum* Mast.

*Sida*

*affinis* Spreng. = *Abutilon rivulare* St. Hil.
*alata* S. Wats. = *Horsfordia alata* A. Gray.
*albida* Willd. = *Abutilon indicum* Sweet.
*alceæoides* Michx. = *Callirhoe alceæoides* A. Gray.
*americana* L. = *Abutilon indicum* Sweet.
*amoena* Wall. = *Abutilon fruticosum* G. & P.?
*amplexicaulis* Lam. = *Abutilon crispum* Sweet.
*amplexicaulis* Vell. = *Wissadula rostrata* Planch.
*amplexifolia* Moench. = *Abutilon amplexifolium* Schl.
*amplissima* L. = *Wissadula* sp.
*angulosa* Boj. = *Abutilon angulatum* Mast.
*angusturensis* Willd. = *Hibiscus* sp.
*anthemidifolia* Remy = *Malvastrum anthemidifolium* A. Gray.
*arborea* L. = *Abutilon arboreum* Sweet.
*Arnottiana* Dietr. = *Abutilon Arnottianum* Gill.
*asiatica* Thunb. = *Abutilon Sonneratianum* Sweet.
*asiatica* L. = *Abutilon asiaticum* Don.
*asiatica* Wall. = *Abutilon muticum* Don.
*atropurpurea* Bl. = *Abutilon auritum* Sweet.
*aurea* Don = *Gaya aurea* St. Hil.
*aurea* Lodd. = *Abutilon* sp.
*aurita* Horn. = *Abutilon auritum* Sweet.
*Bastardia* DC. = *Bastardia viscosa* Kth.
*Bedfordiana* Hook. = *Abutilon Bedfordianum* St. Hil. et Naud.
*bella* Steud. = *Abutilon elegans* Juss.
*Beloere* L'Herit. = *Abutilon indicum* Sweet.
*Berthæ* F. v. Muell. = *Plagianthus Berthæ* F. v. Muell.
*bibracteolata* Dietr. = *Abutilon mexicanum* Presl.
*bidentata* Hochst. = *Abutilon bidentatum* Hochst.
*biflora* Cav. = *Abutilon ibarrense ?*
*bivalvis* Cav. = *Bastardia bivalvis* Kth.
*borussica* Meyen. = *Malvastrum borussicum* Wedd.
*brachyantha* Dietr. = *Anoda* sp.
*brevipes* DC. = *Bastardia viscosa* Kth.?
*Californica* Nutt. = *Sidalcea Californica* A. Gray.
*calycina* Cav. = *Pavonia* sp.
*calyptrata* Cav. = *Gaya calyptrata* H. B. K.
*candicans* DC. = *Gaya canescens* H. B. K.
*capitata* L. = *Malachra capitata* L.
*carnea* Dietr. = *Abutilon carneum* St. Hil.
*carnea* Moench. = *Kosteletzkya* sp.
*carpinoides* DC. = *Malvastrum tricuspidatum* A. Gray.
*castelneana* Griseb. = *Malvastrum.*
*centrota* Spreng. = *Anoda hastata* Cav.
*ceratocarpa* Hook. fil. = *Abutilon ceratocarpum* Gay.
*chilensis* Spr. = *Cristaria betonicæfolia* Cav.
*cistiflora* Bl. Bij. = *Gaya ?*
*cistiflora* L'Herit. = *Abutilon mollissimum* Sweet.
*cistoides* Hort. = *Abutilon mollissimum* Sweet.
*clandestina* Phil. = *Malvastrum clandestinum* Ph.
*coccinea* DC. = *Malvastrum coccineum* A. Gray.

*Sida*

*Collæi* Dietr. = *Abutilon elegans* Coll.
*compacta* Gay = *Malvastrum compactum* A. Gray.
*confertiflora* Dietr. = *Abutilon confertiflorum* A. Rich.
*contracta* Link = *Wissadula rostrata* Planch.
*cordifolia* Forstr. = *Abutilon indicum* Sweet.
*cordilleriana* Dietr. = *Cristaria Haenkeana* Presl.
*cornuta* Willd. = *Abutilon cornutum* Sweet.
*coronata* Scop. = *Abutilon Avicennæ* Gaertn.
*crassifolia* L'Herit. = *Abutilon Jacquini* Don.
*crenatiflora* Pers. = *Anoda crenatiflora* Ort.
*crispa* L. = *Abutilon crispum* Sweet.
*crispifolia* Cav. = *Sphæralcea crispifolia.*
*cristata* L. = *Anoda hastata* Cav.
*crotonoides* Kel. = *Wissadula hernandioides* Garcke.
*cryptopetalum* F. v. Muell. = *Abutilon cryptopetalum* F. v. Muell.
*cubensis* Dietr. = *Gaya occidentalis* H. B. K.
*cuneifolia* Roxb. = *Melochia corchorifolia* L.
*decipiens* St. Hil. = *Malvastrum decipiens* K. Sch.
*delphinifolia* Nutt. = *Sidalcea malvæflora* A. Gray.
*deltoidea* Horn. = *Anoda acerifolia* DC.
*denticulata* Nes. = *Abutilon fruticosum* G. & P.
*denudata* Nees et Mart. = *Anoda denudata* K. Schum.
*depauperata* Hk. f. = *Abutilon depauperatum.*
*depressa* Benth. = *Malvastrum scoparium* A. Gray.
*diantha* Dietr. = *Abutilon dianthum* Presl.
*dictyocarpa* F. Muell. = *Plagianthus* sp.
*Dilleniana* Willd. = *Anoda hastata* Cav.
*dioica* Cav. = *Napæa dioica* L.
*diplocypha* Torr & Gray = *Sidalcea diplocypha* A. Gray.
*discolor* Hook. = *Plagianthus sidoides* Hook.
*discissa* Bert. = *Abutilon discissum* Schl.
*dissecta* Nutt. = *Malvastrum coccineum* A. Gray.
*dissecta* Steud. = *Cristaria dissecta* H. & A.
*disticha* Cav. = *Gaya calyptrata* H. B. K.
*divergens* Benth. = *Wissadula divergens* Benth. et Hook.
*diversifolia* Spr. = *Hibiscus Solandra* L'Herit.
*Doniana* Gill. = *Abutilon Grevilleanum* Gay.
*dumosa* Balk. = *Abutilon Fraseri* Walp.
*ecornis* Vell. = *Abutilon pauciflorum* St. Hil.
*elata* MacFad. = *Abutilon giganteum* Sweet.
*elegans* Colla = *Abutilon elegans* Coll.
*elegans* Dietr. = *Abutilon elegans* St. Hil.
*ellipticum* Steud. = *Abutilon ellipticum* Schlecht.
*eriantha* Steud. = *Cristaria eriantha* H. & A.
*esculenta* Steud. = *Abutilon esculentum* Juss.
*Eteromischos* Cav. = *Abutilon indicum* Sweet.
*excelsior* Cav. = *Wissadula periplocifolia* Presl.
*exstipularis* Cav. = *Abutilon exstipulare* Don.
*ferruginea* DC. = *Wissadula ferruginea* Garcke et K. Schum.
*filiformis* Jacq. = *Abutilon crispum* Sweet ?
*fluviatilis* Vell. = *Abutilon fluviatile* K. Schum.

*Sida*
*fætida* Cav. = *Bastardia viscosa* Kth.
*fragrans* L'Herit. = *Bastardia* sp.
*Fraseri* Hook. = *Abutilon Fraseri* Walp.
*fruticosa* Mill. = *Pavonia Typhalæa* Cav.
*Gaudichaudiana* Don = *Gaya Gaudichaudiana* St. Hil.
*Gaya* DC. = *Gaya hermannioides* H. B. K.
*geminiflora* DC. = *Abutilon geminiflorum* H. B. K.
*geraniifolia* Dietr. = *Cristaria geraniifolia* Presl.
*geranioides* DC. = *Abutilon geranioides* F. v. M.
*gigantea* Jacq. = *Abutilon giganteum* Sweet.
*glauca* Cav. = *Abutilon muticum* Webb.
*glaucophylla* Spr. = *Cristaria glaucophylla* Cav.
*glechomæfolia* Dietr. = *Abutilon glechomæfolium* St. Hil.
*globiflora* Hook. = *Abutilon* sp.
*gracilis* R. Br. = *Abutilon fruticosum* G. & P.
*gracilis* Salisb. = *Abutilon crispum* Sweet.
*grandiflora* Poir. = *Abutilon arboreum* Sweet.
*grandiflora* Don = *Abutilon indicum* Sweet.
*grandifolia* Willd. = *Abutilon mollissimum* Sweet.
*graveolens* Roxb. = *Abutilon graveolens* W. & A.
*Greveana* Baill. = *Abutilon angulatum* Mast.
*Grevilleana* Gill. = *Abutilon Grevilleanum* Gay.
*grossulariæfolia* H. & A. = *Malvastrum coccineum* A. Gray.
*Guianensis* K. Schum. = *Sidastrum* sp.
*Guichenotiana* Steud. = *Abutilon Guichenotianum* Dcne.
*Guilleminiana* Steud. = *Abutilon* sp.
*guineensis* Schum. et Thou. = *Abutilon asiaticum* Don.
*hastata* Sims = *Anoda acerifolia* DC.
*hastata* Willd. = *Anoda hastata* Cav.
*hernandioides* L'Herit. = *Wissadula rostrata* Planch.
*heterophylla* Cav. = *Cristaria heterophylla* Hook. & Arn.
*heterophylla* Klein = *Hibiscus Solandra* L'Herit.
*heterotricha* Zipp. = *Abutilon timorense* Dcne.
*Hilariana* Steud. = *Abutilon carneum* St. Hil.
*hirsuta* Vell. = *Abutilon hirsutum* K. Sch.
*hirsutissima* Dietr. = *Bastardia* sp.
*hirta* Lam. = *Abutilon hirtum* Sweet.
*hispida* Pursh = *Malvastrum angustum* A. Gray.
*Hoheri* Hook. = *Gaya Lyallii* Bak. f.
*Hookeri* Steud. = *Cristaria pinnatifida* Hook.
*Hookeri* Dietr. = *Abutilon albidum* Hook.
*Hulseana* T. & G. = *Abutilon Hulseanum* Torr.
*ibarrensis* DC. = *Abutilon ibarrensis* H. B. K.
*imberbis* DC. = *Abutilon crispum* Sweet.
*inæqualis* L. & O. = *Abutilon inæquale* K. Schum.
*incana* Link = *Abutilon incanum* Don.
*incarnata* Spr. = *Anoda punicea* Lag.
*indica* L. = *Abutilon indicum* Sweet.
*integerrima* Hook. = *Abutilon aurantiacum* Lindl.
*integrifolia* Monti = *Abutilon* sp.
*Jacquini* Dietr. = *Abutilon Jacquini* Don.

*Sida*
*jamaicensis* Mill. = *Malvastrum tricuspidatum* A. Gray.
*Julianæ* Dietr. = *Abutilon.*
*Keerleria* Steud. = *Abutilon floribundum* Schl.
*Kotschyi* Hochst. = *Abutilon fruticosum* G. & P.
*lagiostegia* Link = *Abutilon crispum* Sweet.
*Lawrencia* F. v. Muell. = *Plagianthus spicatus* Benth.
*laxiflora* Steud. = *Abutilon laxiflorum* G. & P.
*Leschenaultiana* DC. = *Wissadula rostrata* Planch.
*leucanthema* Dietr. = *Abutilon leucanthemum* St. Hil.
*leucopetala* F. v. Muell. = *Abutilon leucopetalum* F. v. Muell.
*lignosa* Cav. = *Abutilon Jacquini* Don.
*lineata* Vell. = *Abutilon lineatum* K. Schum.
*longicuspis* Hochst. = *Abutilon longicuspe* Hochst.
*Luciana* DC. = *Wissadula rostrata* Planch.
*macrantha* = *Abutilon lanatum* Miq.
*macrophylla* Hils. & Boj. = *Abutilon angulatum* Mast.
*macrophylla* Wall. = *Abutilon polyandrum* Mast.
*macropodon* Steud. = *Abutilon macropodon* G. & P.
*macrorhiza* James = *Callirhoe alceæoides* A. Gray.
*macrorhiza* Phil. = *Malvastrum* sp.
*macrostipula* Zipp. = *Abutilon Guichenotianum* Dcne.
*Magdalanæ* DC. = *Bastardia viscosa* Kth.
*malacophylla* L. & O. = *Pavonia velutina* A. Juss.
*malvacea* Vell. = *Pavonia sepium* St. Hil.
*malvæflora* DC. = *Sidalcea malvæflora* A. Gray.
*malvæflora* Lindl. = *Sidalcea campestris* Greene.
*malvaviscus* Moc. = *Anoda punicea* Lag.
*maritima* Miq. = *Plagianthus spicatus* Benth.
*Mathewsii* Turcz = *Melochia pyramidata* L.
*mauritiana* Jacq. = *Abutilon Avicennæ* Gaertn.
*megalorrhiza* Ph. = *Malvastrum megalorrhizum* Bak. fil.
*megopotamica* Spr. = *Abutilon megapotamicum* St. Hil.
*meridanha* Vell. = *Abutilon inæquale* K. Schum. ?
*meridionalis* Salisb. = *Abutilon indicum* Sweet.
*microsperma* Cav. = *Abutilon microspermum* Don.
*mociniana* Dietr. = *Kosteletzkya* sp.
*modesta* Phil. = *Malvastrum* sp.
*mollissima* Cav. = *Abutilon mollissimum* Sweet.
*montana* Dietr. = *Abutilon montanum* St. Hil.
*montana* Roxb. = *Abutilon crispum* Sweet.
*mucronulata* DC. = *Malvastrum tricuspidatum* A. Gray.
*multifida* Cav. = *Cristaria multifida* Cav.
*multiflora* Pers. = *Wissadula nudiflora* Garcke.
*mutica* Del. = *Abutilon muticum* Don.
*neelgherrensis* Steud. = *Abutilon neilgherrense* Monro.
*nemoralis* Don = *Abutilon crispum* Sweet.
*nubigena* Walp. = *Malvastrum nubigena* Bak. fil.
*nudiflora* L'Herit. = *Wissadula nudiflora* Garcke.
*nutans* L'Herit. = *Gaya calyptrata* H. B. K.
*obtusa* Cav. = *Abutilon* sp.
*occidentalis* Cav. = *Gaya occidentalis* H. B. K.

*Sida*
*oligophylla* Dietr. = *Hibiscus* sp.
*olygantha* Dietr. = *Abutilon* sp.
*orbiculata* DC. = *Abutilon indicum* Don.
*Oregana* Nutt. = *Sidalcea Oregana* A. Gray.
*Ortegae* Steud. = *Anoda crenatiflora* Ort.
*oxycarpa* F. v. Muell. = *Abutilon oxycarpum* F. v. Muell.
*oxyphylla* Moc. = *Abutilon* sp.
*oxyphylla* Wall. = *Abutilon polyandrum* Mast.
*pæoniflora* Hook. = *Abutilon rufinerve* St. Hil.
*pannosa* R. Br. = *Abutilon glaucum* Webb.
*parnassiæfolia* Hook. = *Malvastrum parnassiæfolium* A. Gray.
*patens* Andr. = *Abutilon* sp.
*patens* Dietr. = *Wissadula patens* Garcke.
*pauciflora* Dietr. = *Wissadula hirsuta* Presl.
*paucifolia* DC. = *Hibiscus* sp.
*pedata* Spr. = *Callirhoe* sp.
*pedicullariæfolia* Meyen. = *Malvastrum pedicullariæfolium* A. Gray.
*peduncularis* DC. = *Abutilon pedunculare* H. B. K.
*pentacarpos* Roxb. = *Abutilon* sp.
*periplocifolia* L. = *Wissadula periplocifolia* Presl.
*periptera* Sims = *Anoda punicea* Lag.
*permollis* Willd. = *Abutilon permolle* Don.
*Perrottetiana* Dietr. = *Abutilon fruticosum* G. & P.
*persica* Burm. = *Abutilon polyandrum* Mast.
*peruviana* Cav. = *Abutilon arboreum* Sweet.
*petiolaris* DC. = *Abutilon petiolare* H. B. K.
*Phyllanthos* Cav. = *Malvastrum phyllanthos* A. Gray.
*pichinchensis* H. & B. = *Malvastrum pichinchense* A. Gray.
*picta* Gill. = *Abutilon striatum* Dicks.
*pilosa* Vell. = *Abutilon pilosum* K. Schum.
*pilosa* L'Herit. = *Abutilon crispum* Sweet.
*pinnata* Cav. = *Malvastrum pinnatum* A. Gray.
*planicaulis* Cav. = *Malvastrum tricuspidatum* A. Gray.
*planiflora* Cav. = *Abutilon Avicennæ* Gaertn.
*polyandra* Roxb. = *Abutilon polyandrum* Mast.
*polyantha* Schl. = *Wissadula rostrata* Planch.
*polycarpa* Chr. = *Abutilon glaucum* Webb.
*polycarpa* Don = *Abutilon grandiflorum* Don.
*Pou* Rheede = *Cassia* sp.
*Presliana* Dietr. = *Abutilon Haenkeanum* Presl.
*polystachya* Vell. = *Abutilon ramiflorum* St. Hil.
*populifolia* Lam. = *Abutilon indicum* Sweet.
*pterygosperma* L'Herit. = *Cristaria multifida* Cav.
*pubescens* Cav. = *Abutilon indicum* Don.
*pulchella* Bonpl. = *Plagianthus pulchellus* A. Gray.
*pulchra* Bert. = *Abutilon ?*
*punicea* Nutt. = *Malvastrum grossulariæfolia.*
*purpurea* Bello = *Kosteletzkya ?*
*pygmæa* Remy = *Malvastrum pygmæum* Bak. fil.
*quinqueloba* Moc. et Sess. = *Anoda acerifolia* DC.
*quinqueangulata* Dietr. = *Anoda hastata* Cav.

*Sida*
*quinquenervia* Duchass. = *Sidastrum quinquenervium* Bak. f.
*racemiflora* Steud. = *Abutilon racemosum* Schl.
*racemosa* Vell. = *Wissadula rostrata* Planch.
*radiata* L. = *Malachra radiata* L.
*radiciflora* Presl. = *Malvastrum* sp.
*ramiflora* Dietr. = *Abutilon ramiflorum* St. Hil.
*ramosa* Cav. = *Abutilon ramosum* G. & P.
*ramosissima* Dietr. = *Abutilon ramossimum* Presl.
*reflexa* Juss. — *Abutilon reflexum* Sweet.
*reticulata* Schr. = *Wissadula* sp.
*retrofracta* DC. = *Bastardia viscosa* Kth.
*retrorsa* L'Herit. = *Abutilon reflexum* Sweet.
*rigida* Dietr. = *Abutilon* sp.
*rivularis* Dietr. = *Abutilon rivulare* St. Hil.
*rosea* L. & O. = *Abutilon purpurascens* K. Schum.
*rostrata* Schum. et Thou. = *Wissadula rostrata* Planch.
*rosula* Meyen = *Malvastrum borussicum* Wedd.
*rubra* Ten. = *Anoda punicea* Lag.
*rufinervis* Steud. = *Abutilon rufinerve* Juss.
*Sabeana* Buckley = *Melochia pyramidata* L.
*saxifraga* H. & B. = *Malvastrum Phyllanthos* A. Gray.
*Schlechtendahlii* Steud. = *Abutilon erosum* Schl.
*Sellowiana* Kl. = *Abutilon Sellowianum* Regel.
*sericea* Cav. = *Abutilon* sp.
*Sesei* Lag. = *Abutilon* sp.
*sessiliflora* Hook. = *Abutilon crispum*, Sweet, fide K. Sch.
*sessiliflora* Dietr. = *Abutilon sessiliflorum* Presl.
*sessilis* Vell. = *Abutilon crispum* Sweet.
*sessilifolia* R. Br. = *Abutilon crispum* Sweet.
*silvatica* Cav. = *Abutilon silvaticum* K. Schum.
*Sonneratiana* Cav. = *Abutilon Sonneratianum* Sweet.
*sordida* Willd. = *Bastardia* sp.
*sparmannioides* Steud. = *Abutilon ramosum* G. & P.
*speciosa* Willd. = *Abutilon purpurascens* K. Schum.
*spinifex* Mol. et Sess. = *Abutilon acerifolium* Schl.
*spicata* Cav. = *Gaya occidentalis* H. B. K.
*spiciflora* DC. = *Wissadula spicata* Presl.
*stellata* Torrey = *Sphæralcea angustifolia* Spach.
*stellata* Cav. = *Wissadula nudiflora* Garcke.
*stellata* Don = *Wissadula rostrata* Planch.
*stelligera* Poep. = *Abutilon ceratocarpum* Gay.
*Steudelii* Dietr. = *Cristaria* sp.
*stipularis* Dietr. = *Abutilon auritum* Sweet.
*striata* Dietr. = *Abutilon striatum* Dicks.
*suberosa* Dietr. = *Bastardia bivalvis* Kth.
*subtriloba* DC. = *Gaya subtriloba* H. B. K.
*sundiaca* Bl. = *Wissadula rastrata* Planch.
*sundensis* Spr. = *Wissadula rostrata* Planch.
*tasmanica* Hk. f. = *Plagianthus pulchellus* A. Gray, var.
*tenax* Salisb. = *Abutilon Avicennæ* Gaertn.
*tetracocca* Dietr. = *Wissadula rostrata* Planch.

*Sida*
*tiliæfolia* Fisch. = *Abutilon Avicennæ* Gaertn.
*timoriensis* DC. = *Abutilon timoriense* Dene.
*tomentosa* Cav. = *Abutilon crassifolium* Don.
*tomentosa* Roxb. = *Abutilon muticum* Sweet.
*tomentosa* Wall. = *Abutilon graveolens* H. & A.
*triangularis* H. B. K. = *Anoda hastata* Cav.
*trichoda* Dietr. = *Abutilon trichodum* A. Rich.
*trichosperma* Dietr. = *Abutilon calycinum* Presl.
*tricuspidata* Cav. = *Abutilon Jacquini* Don.
*triflora* Vell. = *Abutilon purpurascens* K. Schum. ?
*triquetra* L. = *Abutilon triquetrum* Presl.
*trisecta* Dietr. = *Cristaria* sp.
*trisulcata* Jacq. = *Abutilon triquetrum* Presl.
*tubulosa* A. Cunn. = *Abutilon tubulosum* Walp.
*ulmifolia* Spr. = *Gaya occidentalis* H. B. K.
*umbellata* L. = *Abutilon umbellatum* Sweet.
*umbellifera* Dietr. = *Abutilon umbelliflorum* St. Hil.
*unidentata* Dietr. = *Anoda lanceolata* H. & A.
*venosa* Hort. = *Abutilon venosum* Walp.
*vesicaria* Cav. = *Abutilon indicum* Sweet.
*villosa* Wall. = *Abutilon muticum* Don.
*virgata* Cav. = *Abutilon virgatum* Sweet.
*viscosa* MacFad. = *Bastardia bivalvis* Kth.
*viscosa* L. = *Bastardia viscosa* Kth.
*vitifolia* Cav. = *Abutilon vitifolium* Presl.
*Wallichii* Steud. = *Abutilon polyandrum* Mast.
*Zuccagnii* Spr. = *Anoda hastata* Cav.

*Species dubiæ vel ignotæ.*

*Sida abutilifolia* Mill. Dict. ed. viii. No. 12.
*bicallosa* Raf. Fl. Ludov. p. 91.
*bicolor* Cav. Ic. iv. t. 311.
*cardanisea* Raf. Fl. Ludov. p. 90.
*compacta* St. Hil. et Naud. in Ann. Sc. Nat. ii. xviii. p. 54.
*concinna* Phil. Fl. Atac. p. 12.
*deflexa* Cav. in Ann. de Cienc. Nat. 1803, p. 337.
*Fosteri* Monti, Mem. Acad. Lyon. 1860, p. 182.
*frutescens* Blanco, Fl. Filip. ed. ii. p. 384.
*glochidiata* Regel in Acta Petrop. 1876, p. 338.
*incerta* St. Hil. in Ann. Sc. Nat. Ser. ii. xviii. p. 51.
*interrupta* Balb.; DC. Prod. i. p. 464.
*mexicana* Scop. Del. Insul. i. p. 22.
*ovalis* Kostel. Alg. Med. Phan. Flora, 1867.
*ovata* Forsk. Fl. Ægyp. p. 124.
*vitellina* Hoffmsg. Pl. Preiss. vii. p. 33.
*Weinmannii* Heyne, Mon. ii. p. 663.

(To be continued.)

# AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from p. 305.)

62. R. Lejeunei W. & N. *Journ. Bot.* 1890, p. 132. — St. subterete, glaucous, apparently having mostly only a scanty clothing of hair, acicles and stalked glands. *Prickles slender, rather unequal, subulate-lanceolate*, declining from moderate compressed base. L. 3–5-nate, chiefly 3-nate. *Lts. thin, light green*, with shallow distant partly recurved teeth, thinly hairy above, paler and more or less hairy beneath; *term. obovate-oblong, cuspidate*, with narrow subcordate or emarginate base. *Pan. long, lax*, narrow, leafy below, the ultra-axillary part often simply racemose, or nearly so; *rachis and ped.* felted and *densely clothed with rather short white hair* hiding the shortly stalked glands; prickles usually very slender, declining, though often strong on the rachis of the large panicles. Fl. large. Sep. usually long-pointed and reflexed, but clasping the fr. in the S. Dev. plants. "Pet. of a beautiful pink." Stam. far exceeding the greenish styles.

A "species" very imperfectly understood by me, both as to its distinctive characters and its distribution in Engl. The plant which used most commonly to receive this name among us Prof. Babington is now disposed to name *R. Fuckelii* Wirtg., a description of which will be found in Focke's *Syn. R. G.* pp. 306, 307.

63. R. Rhenanus P. J. Muell.? *R. thyrsiger* Bab. prius, *Journ. Bot.* 1886, pp. 226, 227; 1888, p. 379; *B. E. C. Rep.* 1888, pp. 208, 209. — *St.* arcuate-prostrate, bluntly angular, striate, more or less glaucous, *with crowded stellate hairs*, and many subequal acicles and stalked glands. Prickles rather unequal, subfalcate or declining from large compressed base, nearly confined to angles. L. chiefly 5-nate-pedate. *Lts.* rather coarsely *dentate-serrate*, green on both sides, paler and only slightly hairy beneath; *term. obtusangular-obovate, cuspidate-acuminate*, with narrow and usually entire base. *Pan. remarkably long, rather lax, pyramidal*, very hairy, with a good many rather shortly stalked glands, acicles and slender prickles, with long ascending racemose-corymbose or racemose-umbellate few-flowered branches below; the ultra-axillary part elongated with many erect-patent 1–2-flowered branches; all the branches, and nearly all the fl., except the term. one, having very long stalks. Sep. ovate-acuminate, reflexed in fl., more or less patent or erect in fr. Pet. rather large, ovate-oblong, distant, pink or pinkish. Stam. pink, far exceeding purplish styles.

A very distinct-looking plant, with its long nearly naked pan., its many long-stalked and mostly single-flowered upper branches, and its very hairy stem. It is the "*R. Bloxamii*" of *Fl. Plym.* I have seen none but Dev. & Cornw. specimens.

64. R. longithyrsiger Lees. *R. pyramidalis* Bab. prius. — St. prostrate, bluntly angular, striate, slightly hairy, with many short subequal acicles and stalked glands. Prickles subequal,

almost wholly confined to angles, strongly declining from large compressed base. L. mostly 3-nate. *Lts. subequal and remarkably uniform*, thin, rather finely dentate-serrate, opaque and hairy above, paler and *softly hairy beneath*; term. obovate-cuspidate or cuspidate-acuminate, with narrow emarginate or entire base. *Pan. pyramidal* (when large, remarkably so), racemose above; *rachis and ped. straight, rigid*, felted and *densely clothed with short white hair, and purple stalked glands* and acicles; prickles few, slender, declining. Sep. triangular-attenuate, patent or loosely clasping fr. Pet. very narrow, white or slightly greenish white. Stam. white, exceeding reddish styles. Flowering shoot frequently prostrate for a considerable distance. Most of the branches ascending, but remarkably straight and rigid, like the rachis. In woods and wood-borders, S.W. Engl. and Wales.

Usually a very distinct and easily recognised bramble, with its straight pan.-rachis and ped. purplish from the crowded glands, and its rather small uniform 3-nate obovate lts.

65. R. FOLIOSUS W. & N. *R. Güntheri* Bab. prius. *R. flexuosus* P. J. Muell., 1859 (non Lej., 1824). *R. derasus* Lej. & Muell. *R. saltuum* Focke, *Journ. Bot.* 1890, p. 133.—St. 5-gonous, striate and in the stronger plants even sulcate, not glaucous, with a good many subequal acicles, stalked glands and hairs, and numerous very small tubercles. Prickles nearly equal, rather scattered, small, strongly declining or even deflexed from a long compressed base. *L. mostly 3-nate*, but with one or more 5-nate-pedate on most of the stronger st., *often large*. *Lts.* nearly uniform in outline, *with crowded acute teeth* (only occasionally double), hairy on both sides, *thick and white-felted beneath when young*, thinner afterwards, and often only pale green; *term. broadest near the middle, and usually narrowing very gradually towards both ends*, acuminate, round-based. *Pan. long and narrow*, often forming an angle at each leaf, sometimes leafy throughout, and then having a considerable number of ovate-acuminate simple l. above; *branches* mostly short and few-flowered, generally *fasciculate*, erect-patent; rachis and ped. felted with short hairs and many subsessile purple glands; acicles and declining prickles usually few; *upper l. white-felted beneath*. Sep. ovate-acuminate, remarkably white-felted, glandular, aciculate, usually reflexed, but occasionally patent or loosely clasping in fr. Stam. white, about equalling the green or reddish styles. Woods and bushy places; widely distributed, locally abundant.

Mostly recognisable at a glance, in spite of considerable variation. In his paper lately published in a German *Flora*, Dr. Focke writes (I am again indebted to Rev. E. S. Marshall for the translation):—"In higher hilly localities the stam. are apt to be shorter than the styles, in the low country to be longer. The sep. are as a rule reflexed, but patent in certain forms (among others, in *R. derasus* P. J. Muell.). The true *R. foliosus* has thick greenish barren st., thick leathery l. shortly hairy beneath, a more leafy inflorescence, and white fl. *R. flexuosus* P. J. Muell. and *R. derasus* P. J. Muell. —which differs only by its more patent sep.—are weaker, with white or blue-reddish fl., and greenish styles. *R. saltuum* Focke is

also weaker, has thin brown st., l. with appressed white felt beneath when young, pink fl., and reddish styles. All these variations appear to be caused by conditions of station, and especially by the chemical properties of the soil (poverty in lime and clay in the case of *R. saltuum*)."

*R. Genevierii* Bor. will probably have to be added to our RADULÆ list, as Dr. Focke has suggested that name for a plant which the Rev. A. Ley finds abundantly at Clifford and Whitney, Heref. (v. *B. E. C. Rep.* 1887, p. 174). It is described in Genevier's *Essai* as well as in Boreau's *Flora*, and is placed by Focke between *R. echinatus* and *R. radula*.

Group 7. KOEHLERIANI (= HYSTRICES Focke).—St. low-arching or prostrate, rooting, clothed throughout with very unequal scattered prickles, acicles, bristles, and stalked glands. Pan.-rachis generally furnished with many stronger and weaker glandular bristles (*i. e.*, "acicles" and "bristles") as connecting-links between the prickles and the simple stalked glands; lateral branches much as in the RADULÆ, *i. e.*, umbellate-racemose or cymose; pet. of many species of a vivid pink. In all our species, except *cavatifolius* and *Bloxamii*, the stam. exceed the styles. Usually large strong plants, though with low-arching or nearly prostrate st.

Of this (as of the EGREGII) Dr. Focke speaks as a "transition group"; and it certainly appears as if the earlier species in it might be placed almost equally well among the RADULÆ, as in their case the *very* mixed armature characteristic of the KOEHLERIANI is only found (if it can be said to be found at all) in the strongest plants.

A. Stalked glands and gland-tipped bristles on pan.-rachis and ped., though very unequal, rarely if at all exceeding the hairs:—(66) *cavatifolius*; (67) *mutabilis*; (68) *Bloxamii*; (70) *adornatus*; (71) *obscurus*.

B. Stalked glands, gland-tipped acicles, and bristles on pan.-rachis and ped. exceedingly unequal, often surpassing the hairs, and occasionally equalling some of the prickles:—(69) *rosaceus* and vars.; (72) *Koehleri* and vars.; ? A. or B. (73) *badius* ?

66. R. CAVATIFOLIUS P. J. Muell. *Journ. Bot.* 1878, pp. 144, 145; 1886, p. 231; *B. E. C. Rep.* 1884, p. 102; 1885, p. 126.—*St.* angular and sulcate, *subglabrous*, with rather few unequal mostly small tubercular-based acicles and stalked glands. Prickles many, unequal, somewhat scattered, declining or occasionally deflexed from compressed base, yellowish. *L.* 5-nate, *often very large*. *Lts.* unequally rather doubly but acutely dentate-serrate, glabrous above, *pale yellowish green* and hairy on the veins *beneath*; *term. very broadly cordate-ovate, cuspidate-acuminate-attenuate*, excluding the long point scarcely longer than broad; interm. and bas. very similar, but narrower. *Pan. long, lax, truncate*, with many of the *branches* (sometimes even the lowest) remarkably *patent or divaricate*, and the term. ped. subsessile; leafy below, and usually with many simple l. above narrowing gradually, towards the top of the rachis,

into lanceolate or linear bracts; its prickles unequal, slender, declining from long bases; its subequal acicles, stalked glands and patent hairs many. Sep. ovate-attenuate, reflexed. Pet. rather small, obovate. Stam. (becoming pink) about equal to the styles. Bushy places (Norf., Heref., Glost., Monm., Hants, Cornw.).

Dr. Focke speaks of this as "near *R. fuscus* W. & N. and *R. mutabilis* Genev."; but it may be readily distinguished from both by the very remarkable l. (which seem to me literally unique), and further, from *fuscus* by the glabrous or subglabrous st., which, together with the reflexed sep., also separates it completely from *R. adornatus*, which in pan. it nearly approaches. This and the next two or three "species" seem our connecting-links between the Radulæ and the Koehleriani.

67. R. mutabilis Genev. *Essai*, pp. 106–108; *Journ. Bot.* 1871, pp. 368–370; 1886, p. 232; 1887, p. 144; *Fl. Plym.* pp. 125, 126. —St. much as in the last, but hardly sulcate, and with still smaller acicles or very small tubercular-based prickles, and usually very few stalked glands on the striate faces, often glaucous; the large prickles still more unequal, but chiefly confined to the angles, mostly patent or subpatent from a much dilated compressed base. L. 5-nate; in shape recalling those of *R. pallidus* W. & N., but thicker. *Lts.* rugose above, much paler and very hairy beneath, and often felted, especially when young, unevenly and doubly *crenate-dentate or lobate-dentate, narrow; term.* ovate-acuminate or obovate-acuminate, *tapering very gradually to the long point, cordate or subcordate. Pan. long, lax, narrowly pyramidal or cylindrical*, leafy below, with the lower branches distant ascending, and the topmost ones crowded into a rather broad rounded top; its *rachis sulcate, close-felted, very prickly aciculate and glandular;* the larger prickles strong, many. Sep. ovate, often long-pointed, white-felted and aciculate, reflexed. Pet. long, narrow. Stam. white, exceeding greenish styles. Yorks., Surrey?, Dev.

I have thought it best to make this description from our well-known strongly marked Dev. plant, though Genevier labelled a specimen in his herbarium from one of the localities (Tamerton Foliott), "var. *nemorosus*." The Surrey plant (fairly abundant at Witley and Tilford) seems hardly separable from this, though in some respects also recalling *R. echinatus*, especially in the more incise-serrate dentition of the l. Its strong prickles are longer and more crowded than in the Dev. plant, its st. considerably more hairy (in this agreeing better with Genevier's description), and its truncate-cylindrical pan. broader, with patent or even divaricate branches in the ultra-axillary part. I have not seen the Yorks. plant; nor anything from other counties that I should now put with these two.

68. R. Bloxamii Lees. — St. angular, with striate or slightly sulcate faces, often glaucous, with many unequal acicles, stalked glands, and stellate hairs. *Prickles* somewhat scattered and unequal, all usually *rather weak*, subpatent or declining, with a few falcate ones intermixed. *L.* 5–3-nate, chiefly 5-nate-pedate, *convex. Lts. broad, rugose*, wavy at edge, dull green above (except when

quite young), paler and very soft beneath, *hairy on both sides*, usually not at all imbricate, *very coarsely and doubly incise-dentate or even lobate-dentate in the upper half;* term. very broadly roundish-obovate or truncate-obovate, with long cuspidate-acuminate point and rounded or emarginate base; interm. similar, but narrower; bas. oblong, acute. *Pan. long, usually leafy to the broad rounded top*, very lax below, with long ascending branches; upper branches rather short, crowded and interlacing; *rachis and ped. straight, stout, covered with dense felt and long villous hairs* nearly hiding the many purple acicles and stalked glands; the prickles also many, mostly long and slender, declining or falcate. *Sep.* ovate, abruptly acuminate, clothed like the rachis and white-margined externally, conspicuously white-felted within, *patent and star-like when the pet. fall*, loosely reflexed in fr. Pet. unusually variable in size and shape, but apparently always white, and usually crumpled and fugacious. Stam. white, usually falling short of the styles. Carpels exceptionally small. A very hairy plant. Remarkably constant in character, except in the size and shape of the pet., and so one of our most readily recognised brambles. Heaths, hedges, &c.

Widely but locally distributed; especially abundant in E. Dors. and S. Hants.

69. R. ROSACEUS W. & N. — St. roundish or bluntly angular, often bright red, subglabrous (or occasionally having rather many stellate hairs), with many scattered unequal pricklets, tubercles, and stalked glands. Larger prickles (chiefly on angles) strong, nearly equal, declining from large compressed base. *L. 3-nate or 5-nate-pedate, broad. Lts. coarsely* and somewhat doubly *dentate-serrate or crenate-mucronate*, shining and often subglabrous above, paler and thinly hairy beneath; *term. broadly elliptic or roundish*, cuspidate-acuminate, cordate or subcordate; lateral (of 3-nate l.) also exceptionally broad, and deeply cleft beneath. *Pan. broad, diffuse*, usually rather short, *with strong erect-patent branches and spreading or divaricate branchlets*, all thickly felted, hairy and purple, with crowded very unequal stalked glands, bristles and acicles; the prickles mostly small, slender, declining; the top leafless or nearly so, broad, truncate or rounded. Cal. less deeply divided than usual, with *very attenuate* grey-felted white-margined and glandular "*sep.*," loosely reflexed or ascending. Pet. showy, usually broad, pink. Stam. pinkish, exceeding styles. Bushy places; local (in the exact form described).

However it may be on the Continent, in England it seems impossible to keep *rosaceus* and *hystrix* specifically apart. There are, in fact, frequent intermediates between typical *rosaceus* and the three more marked forms, which I propose placing under it as vars.

b. *R. hystrix* (W. & N.). — St. more angular and hairy; sometimes very strongly armed. *L. more frequently 5-nate. Lts. usually much narrower*, with entire or emarginate base, more irregularly *deeply and sharply serrate*, and not unfrequently incised or lobate, green and weakly pubescent or downy beneath. *Pan. rather long and narrow*, and usually more leafy, often with very mixed arma-

ture, with only a few of the stalked glands and bristles exceeding the patent hairs. *Sep. embracing fr.*

Dr. Focke prefers keeping this as a distinct species, with *R. adornatus* P. J. Muell. as a "hill-country" var.; but he admits that "a hard and fast limitation of the forms of *R. hystrix* appears to be impossible." "The typical form," he says, "originally found by Weihe at Mennighüffen, in the Minden district, has crowded very unequal prickles on the barren st., narrow lts., and orbicular pet."; while near Bremen he finds "a similar strongly-armed form with broader l. and narrower pet.," and "other forms occur here and there," approaching *adornatus*.

c. *R. Lingua* Bab. *Brit. Rub.* p. 175. — Very near *hystrix;* but "the term. lt. is more abrupt, and the edges of all the lts. are much more finely dentate, with the principal teeth patent, but the others directed very decidedly towards the apex of the lt." Pan. "very loose, consisting almost wholly of long simple ped." Okehampton, Dev. I have seen this also near Launceston, Cornw., and think it a well-marked var. Its large prickles are more decidedly separated off from the rest of the st.-armature than in other forms.

d. *infecundus.*—I suggest this as a varietal name for a woodland plant very abundant in Heref., and several West and Mid. Engl. counties. In general colouring, in the very marked sep., and in the clothing and armature of pan.-rachis and ped. I can see no difference between it and the type; but the *st.-prickles* are usually *much smaller*, and in many cases nearly subulate from a long tubercular base; the st.-armature generally is reduced in quantity, often consisting chiefly of crowded minute acicles and scattered hairs; the l. are chiefly 5-nate-pedate, and the *lts.* narrow, *softly hairy beneath*, and more sharply though usually not deeply serrate; the *lax pan.* is *narrowly pyramidal*, and frequently the floral and reproductive organs seem imperfectly developed, the *sep. soon clasping the half-withered pet.*, and the fr. seldom produced. I cannot believe it a hybrid. Here, I suspect, should come Mr. Bagnall's plant from Crackley Wood, near Kenilworth, which Prof. Babington in 1889 (v. *B. E. C. Rep.* p. 254) thought might be the *R. myriadenophorus* Rip., and which he would place as a var. of *R. thyrsiflorus*.

70. R. ADORNATUS P. J. Muell. *R. atro-rubens* Wirtg. (and of Bloxam). "*R. foliosus* W. & N." of Bloxam (in part). *R. exsecatus* P. J. Muell. *Journ. Bot.* 1878, p. 177; 1886, p. 233; 1891, p. 332 (cf. *B. E. C. Rep.* for 1872, 1886, and 1887). — St. angular, striate or subsulcate, often glaucous, usually very aciculate and glandular, but with few hairs. *Larger prickles* somewhat scattered and unequal, *mostly deflexed*. L. chiefly 5-nate-pedate. *Lts.* irregularly and doubly dentate-serrate or incise-serrate, *usually only very slightly hairy beneath*, *harsh*, and with very prominent ribs, with many hooked prickles on petioles, petiolules and midribs; *term. narrowed very gradually to the acuminate point*, *usually broadest a little below the middle*, and thence rounded to the entire or more or less cordate base; intermediate with patent or divaricate petiolule; bas. conspicuously pedate. *Pan. very lax and narrow*, often very long, and

with *most of the branches short, patent, or divaricate, and having only 2–3 nearly equal-pedicelled fl.; top truncate;* rachis and ped. armed like the st., but felted, and rather more hairy. *Sep.* strongly aciculate, *erect soon after flowering. Pet.* rather small, *white. Stam. and styles ultimately conspicuously red.* The nearly triangular top of the term. lt. is very marked. Rather frequent, though local, in S. and W. Engl.;—at all events, from Warw. to W. Cornw. and S. Hants.

The narrow lax pan. with few-flowered (and often) patent branches, the clasping sep. and red stam. and styles, together with the very peculiar l., give this plant usually a very distinct look. Bloxam's Warw. "*foliosus*," from Ansley Coalfields, has weaker st.-armature, and l. softer and somewhat white-felted beneath, as well as rather different in outline; but his "near Solihull" plant seems to connect this with *adornatus*. The plants placed under "*R. foliosus* Weihe" (on Bloxam's authority) in *Fl. Plym.* appear to me more nearly to approach *R. fuscus;* but see *Fl. Heref.* p. 104.

71. R. OBSCURUS Kalt. *B. E. C. Rep.* 1890, p. 295. *R. Reuteri* Bab. prius, *Journ. Bot.* 1886, p. 234.— *St.* prostrate, *terete*, striate, *of a chocolate-brown colour, densely clothed with villous hair, and unequal prickles, acicles and stalked glands.* Larger prickles declining or falcate from much compressed base. L. mostly 5-nate-pedate; or chiefly 3-nate in shade. *Lts.* narrow, hairy and dark green above, paler and rather softly pubescent beneath, *with very crowded deep and usually sharp serrations*, which are often nearly simple, but not unfrequently very compound and even lobate above; *term. obovate-rhomboidal-acuminate* or cuspidate-acuminate, narrowed below to the nearly entire base. *Pan. nearly cylindrical, with crowded erect-patent branches, and slightly rounded top;* rachis and ped. densely felted, villous and purplish brown with crowded stalked glands, acicles, and slender falcate prickles. Sep. patent or ascending after flowering, densely villous-felted and aciculate. Pet. elliptic or obovate, distant, "vivid pink." Stam. somewhat longer than the greenish styles. Fruiting but little, like most woodland forms. Woods and thickets ("Banchory, N.B."; Lancs., Yorks., Heref., Monm.); locally abundant.

It remains to be seen whether this can be kept apart from *hystrix*. In the Ross (Heref.) district, where it is abundant, it certainly keeps quite distinct from the *rosaceus-hystrix* form which I am calling *infecundus;* while a taller, hairier, and less prickly plant occurs here and there, appearing to connect *obscurus* somewhat with the *hirtus* group.

72. R. KOEHLERI W. & N.—*St. strong*, but usually subterete or only bluntly angular, rufescent, somewhat hairy, *with crowded prickles, tubercular-based acicles, bristles, and stalked glands of all sizes.* Larger prickles long, mostly declining slightly from compressed base. L. chiefly 5-nate-pedate. *Lts.* unevenly and coarsely dentate, often incised upwards, glabrescent and shining above, paler and usually rather thinly hairy beneath, *not imbricate;* term. elliptic or obovate, acuminate or cuspidate-acuminate, subcordate. Stipules

linear-lanceolate. *Pan.* often long and *leafy to near the rather broad truncate top*, fairly open; branches longish, but few-flowered, nearly patent; *rachis and ped. very strongly armed* and clothed like st. *Sep.* ovate-attenuate, very aciculate and glandular, greenish, usually strongly *reflexed*, though sometimes ultimately patent on the shortly stalked term. fl. Pet. oval, usually white. Stam. exceeding styles. Hedges, &c.

This, the typical plant, is widely but locally distributed. Not always easily distinguished from strong *hystrix* forms; but ordinarily more prickly, paler, and with more open pan., besides having reflexed sep. and white pet.

The following are our chief vars.:—

b. *R. pallidus* Bab. — St. more angular, and with considerably more difference between the large and smaller prickles. *Lts. with long soft hairs on the veins and usually somewhat felted beneath, with some of the chief teeth patent or recurved. Pan. much narrower and laxer, and with the term. fl. usually longer-stalked.*

Very different from the type, and (I should say) well marked, though I cannot distinguish it from the plants usually named *saxicolus* by Prof. Babington, nor from some of those which he has labelled *melanoxylon*. Woods and thickets through a great part of Engl. (and up to over 1000 ft. above the sea at Buxton), though, so far as I have been able to trace it, rarely reaching the southern counties.

c. *R. plinthostylus* (Genev.), *Journ. Bot.* 1887, p. 22. — St. angular, striate. *Lts. conspicuously narrowed below to the entire base;* often gradually attenuate at both ends, especially on pan., more sharply toothed, paler and very softly hairy beneath. Stip. filiform. *Cal. patent* or only very loosely reflexed. *Pet. and styles pinkish.* Not differing greatly from the type. Kirkcudbright?, Dors., E. Cornw.

d. *hirsutus.*—*St.* more angular, *deeply striate or subsulcate, hirsute; with extraordinary variation in the length of the prickles*, the longest usually quite patent and much compressed. *L.* smaller and more frequently 3–5-nate and more conspicuously pedate, somewhat lobate dentate and *thickly softly hairy beneath. Pan. elongate*, in great part ultra-axillary and much narrowed above, but with long ascending branches below; *clothed and armed like the st. Sep. only loosely reflexed from fr. Pet. pink.* Surr. and neighbouring counties; locally abundant. Prof. Babington and Dr. Focke agree with me in placing this strongly marked form (not, I think, previously described) under *Koehleri*.

73. R. BADIUS Focke? "*R. fusco-ater* Weihe?" Bab. *Journ. Bot.* 1886, p. 231.—As I do not understand this plant (or plants?), I quote here the description from *Bab. Man.* ed. 8, p. 117:—"*St.* arcuate-prostrate, angular, *hairy;* prickles unequal, slightly declining from a very large compressed base; setæ and strong unequal aciculi many; *lts.* irregularly or rather doubly dentate *even above*, green and hairy beneath; term. lt. broadly cordate, ovate-acuminate or subcuspidate; *bas. lts. stalked, imbricate;* pan. long, subpyramidal, leafy below, its branches patent corymbose, or the axillary branches

erect-patent racemose; the prickles many, unequal, longest at about the middle of the fl.-shoot, its hairs, setæ and aciculi many, unequal; *sep.* ovate-attenuate, setose, aciculate, *patent* or *adpressed to the fr.*—R. G. 26. The lts. are all imbricate, and rather rough beneath. Pet. pink. Stam. incurved, exceeding styles. Heaths." With this may be compared the following translation of Dr. Focke's recently published description of *R. badius* (among his ADENOPHORI):—" St. sparsely hairy, red-brown, with unequal prickles shortly subulate from a broad base. L. as in *R. fusco-ater*, but the stalks of the lts. shorter. Inflorescence compound; rachis densely hairy, glandular, with unequal prickles. Pet. pink. Stam. overtopping styles. Partly recalling *R. fusco-ater*, partly forms of the *R. nemorosus* group."

I follow Prof. Babington in placing this after *R. Koehleri.*

(To be continued.)

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## ON A NEW FORM OF *ROSA TOMENTOSA* WOODS.

BY EDMUND G. BAKER, F.L.S.

DURING a recent excursion from West Malvern, my attention was drawn to a rose, which, unless carefully studied in its different stages of growth in a living state, might easily be mistaken for *Rosa mollis* Sm. It has the suberect growth and the intensely downy leaves, in fact it has the habit of growth and foliage, of *mollis;* but differs from the true plant in its fruit, which is smaller, and ripens later; and in its sepals, which are more compound, not connivent, and not completely persistent. I strongly suspect that this is the rose which has often been mistaken for *mollis* in the middle and southern counties of England, and indeed it would be absolutely impossible to distinguish dried specimens in an early stage of growth from true *mollis.* As its alliance is clearly with *R. tomentosa* Woods, rather than with *mollis*, and as it apparently is undescribed, I have ventured to give it a varietal name.

ROSA TOMENTOSA var. PSEUDOMOLLIS mihi.—Stem short, suberect; prickles slightly or sometimes decidedly curved; leaves intensely downy, covered with grey pubescence, with hardly any glands on the under surface, doubly serrated; pedicels straight, hispid; fruit subglobose or ellipsoidal, not ripening in midland counties till end of September; three sepals more or less pinnately divided; sepals not leafy at point, glandular on the back, spreading, deciduous.

Hab. On the ridge of Wenlock limestone that runs parallel to the Malvern Hills, opposite to West Malvern, in the counties of Herefordshire and Worcestershire.

This plant was associated with *R. micrantha*, *R. tomentosa* and its var. *scabriuscula*, *R. arvensis*, and *R. canina.* It differs from typical *tomentosa* in its suberect habit, intensely pubescent leaves, and more persistent sepals. My father tells me he has seen the same form in Oxfordshire; and in the Herbarium of the Natural History Museum, South Kensington, there is a plant gathered by

Mr. Blow at Welwyn, Hertfordshire, which appears to be identical with the above. I have placed specimens of the rose in the Herbarium of the above-mentioned institution.

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# FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 307.)

**Lathyrus Aphaca** L. Sp. Pl. 729 (1753). **1632.** Johnson, Kent, 37. "About Dartford."—Ger. em. 1250 (1633).

**L. Nissolia** L. Sp. Pl. 729 (1753). **1632.** Hampstead Heath. —Johns. Enum.

**L. hirsutus** L. Sp. Pl. 732 (1753). **1666.** "At Hadley Castle two miles from Lee in Essex."—Merrett, 70.

**L. pratensis** L. Sp. Pl. 733 (1753). **1597.** "In most grassie pastures, borders of fieldes, and among graine almost everie where." —Ger. 1054.

**L. tuberosus** L. Sp. Pl. 732 (1753). **1861.** "Collected at Fyfield, near Ongar, Essex, last August" [1860].—Joshua Clarke in Journ. Linn. Soc. v. 187. Mr. Octavius Corder found it in 1859. See Gibson's Fl. Essex, 88.

**L. sylvestris** L. Sp. Pl. 733 (1753). **1597.** "There groweth great store thereof in Swanescombe woode, a mile and a halfe from Greene-Hithe in Kent, as you go to a village thereby called Betsome."—Ger. 1054.

**L. palustris** L. Sp. Pl. 733 (1753). **1667.** "In a wet marsh ground on the left hand of Peckham Field from London."—Merrett, 70.

**L. maritimus** Bigel. Fl. Boston. ed. 2, 268 (1824). **1570.** Observed in 1555 on the coast of Suffolk between Orford and Aldborough.—Caii opusc. Lib. 2, 29. See Ger. emac. 1250.

**L. macrorrhizus** Wimm. Fl. Schl. 166 (1832). **1548.** "I have sene thys herbe of late in Coome parke" [Surrey].—Turn. Names, B iiij (under *Astragalus*).

**Prunus spinosa** L. Sp. Pl. 475 (1753). **1562.** "Our slobush or black thorn."—Turn. ii. 104.

**P. insititia** Huds. i. 186 (1762). **1562.** "Bulles tre . . . plenty . . . . in Somerset shyre."—Turn. ii. 104. "Hampstead Heath."—Johns. Enum. (1632).

**P. Avium** L. Fl. Suec. ed. 2, 165 (1755). **1634.** "In a wood by Bathe."—Johns. Merc. Bot. 28.

**P. Cerasus** L. Sp. Pl. 474 (1753). **1841.** "First observed by me two years ago, growing plentifully in a wood near Whippingham, Isle of Wight."—Bromfield, E. B. Supp. 2863 (Nov. 1841).

**P. Padus** L. Sp. Pl. 473 (1753). **1597.** "Groweth very plentifully in the north of England . . . in Lancashire almost in everie hedge."—Ger. 1322.

**Spiræa Ulmaria** L. Sp. Pl. 490 (1753). **1568.** "Medewurte . . . groweth about water sydes," &c.—Turn. iii. 8.

**S. Filipendula** L. Sp. Pl. 490 (1753). **1548.** "Filipendula groweth in great plentie beside Syon & Shene in the middowes."—Turn. Names, E vij.

**Rubus Idæus** L. Sp. Pl. 492 (1753). **1597.** "I have found it among the bushes of a cawsey, neere unto a village called Wisterson, where I went to schoole, two miles from the Nantwitch in Cheshire."—Ger. 1091.

**R. nessensis** W. Hall in Trans. R. Soc. Edin. iii. 21 (1794). *R. suberectus* Anderson (1813). **1794.** "I found [it] in the Highlands in 1787, on the banks of Lochness."—W. Hall, *l. c.* 20. See Journ. Bot. 1885, 372.

**R. fruticosus** L. Sp. Pl. 493 (1753). **1562.** "Groweth commonlye in hedges and with other busshes."—Turn. ii. 118.

**R. corylifolius** Sm. Fl. Brit. ii. 542 (1800). **1800.** Frequent in hedges.—Smith, *l. c.* But see Ray Syn. iii. 467: "videntur sane duæ Rubi vulgaris species," &c.

**R. cæsius** L. Sp. Pl. 493 (1753). **1597.** "In divers fieldes in the Isle of Thanet, harde by a village called Birchinton."—Ger. 1091. It is probably the second kind of bramble mentioned in Turn. ii. 118.

**R. saxatilis** L. Sp. Pl. 494 (1753). **1670.** "In the North West part of Yorkshire."—Ray, Cat. 269.

**R. Chamæmorus** L. Sp. Pl. 494 (1753). **1597.** "Plentifully upon Ingleborough hils," &c.—Ger. 1091.

Until the publication of Smith's English Flora (1824), the above were all the species of *Rubi* described in British Floras—*R. fruticosus* thus standing as the representative of 53 species (418—470) of L. Cat. I have attempted to trace the history of these 53 species, but in several cases the result is not satisfactory, so I have decided to let this genus stand as above. For further information on the subject see vol. i. of E. B. Suppl. (1830), the early vols. of the Phytologist (1845–8), Babington's papers in Ann. & Mag. N. H. (1845, &c.), and the Supplement to E. Bot. ed. iii.

**Dryas octopetala** L. Sp. Pl. 501 (1753). **1650.** "In the mountains betwixt Gort and Galloway [Galway]. Mr. Heaton."—How, Phyt. 120.

**Geum urbanum** L. Sp. Pl. 501 (1753). **1548.** "Groweth communely about hedges."—Turn. Names, D iij.

**G. intermedium** Ehrh. Beitr. vi. 143 (1791). **1663.** "Found in the fields somewhere about the town" (Cambridge).—R. C. C. App. i. 4.

**G. rivale** L. Sp. Pl. 501 (1753). **1633.** "Found . . . in Wales by . . . Mr. Thomas Glynn."—Ger. em. 996.

**Fragaria vesca** L. Sp. Pl. 494 (1753). **1548.** "Every man knoweth wel inough where strawberies growe."—Turn. Names, D ij. back.

**Potentilla Fragariastrum** Ehrh. Herb. 146 (1789). **1633.** "Upon Blackheath, in Greenewich Park," &c.—Ger. em. 998.

**P. verna** L. Sp. Pl. 498 (1753). **1641.** "In montosis."—

Johns. Merc. Bot. pars alt. 28. "Attulit ad nos Th. Willisellus Pentaphylli genus parvum in pascuis circa Kippax agri Eboracensis vicum."—Ray, Cat. 235 (1670).

**P. maculata** Pourr. in Mem. Acad. Toulouse, iii. 326 (1788). *P. alpestris* Hall f. (1818). **1799.** "Gathered in 1793 on Ben Lawers by Mr. J. Mackay."—E. B. 561.

**P. silvestris** Neck. Delic. Gallo-Belg. i. 222, 1768. *P. Tormentilla* Linn. **1538.** "Heptaphyllon . . . nostratibus. Tormentyll & Tormeryke dicitur."—Turn. Lib. "It groweth in mores and heaths."—Turn. Names, H v., and Herb. iii. 74.

**P. procumbens** Sibth. Fl. Oxon. 162 (1794). **1677.** "It grows in the edges of the corn-fields between Hockley and the woods under Shotover Hill."—Plot, N. H. Oxon. 146.

**P. reptans** L. Sp. Pl. 499 (1753). **1538.** "Quinquefolium . . . a nostris Synkfoly."—Turn. Lib. "Commune in al places."—Turn. Names, F v., back.

**P. Anserina** L. Sp. Pl. 495 (1753). **1568.** "Wild Tansey . . . groweth in colde and watery places."—Turn. iii. 4.

**P. rupestris** L. Sp. Pl. 496 (1753). **1690.** "Ad latera montis cujusdam *Craig-Wreidhin* dicti in Comitatu montis Gomerici Walliæ."—R. Syn. i. 91. Found by Lloyd.—R. Syn. ii. 141.

**P. argentea** L. Sp. Pl. 497 (1753). **1632.** "Quinquefolium . . . periæum [petræum] majus Tab.," near Gravesend.—Johns. Kent (1632), 37.

**P. fruticosa** L. Sp. Pl. 495 (1753). **1670.** "Ad ripam meridionalem fluvii Tees" (Yorkshire), found by Tho. Willisel.—Ray, Cat. 340. But in ed. 2, p. 228, one Johnson is said to have first observed it.

**P. palustris** Scop. Fl. Carn. ed. 2, i. 359 (1772). **1597.** "In a marrish ground adjoining to the land called Bourne ponds, halfe a mile from Colchester" (Essex).—Ger. 839.

**P. Sibbaldi** Haller f. in Seringe, Mus. Helv. d'Hist. Nat. (Bot.), i. 51 (1820). **1684.** "Transmissa fuit ad Hortum Medicum à regione *Iernensi*, ubi in sylvis sponte provenit." — Sibbald, Scot. Ill. ii. 25.

**Alchemilla arvensis** Scop. Fl. Carn. ed. 2, i. 115 (1772). **1570.** ". . . Angliæ tamen Bristoiæ frequentissimo apud mulierculas usu receptū est."—Lob. Adv. 324.

**A. vulgaris** L. Sp. Pl. 123 (1753). **1548.** "Groweth in middowes like a Mallowe."—Turn. Names, H i. "In the towne pastures by Andover," &c.—Ger. 802.

**A. alpina** L. Sp. Pl. 123 (1753). **1677.** "We found it this year [1671] on a mountain in Westmerland beside a great pool or lake called Hulls-water."—Ray, Cat. ed. 2, 11.

**A. argentea** Don, ex W. C. Trevelyan, Veg. Faroe Islands, 10 (1837). *A. conjuncta* Bab. Ann. & Mag. N. H. x. 24 (1842). **1837.** "I am informed by Mr. D. Don that the same plant was gathered by his father in the Island of Skye, and that he considered it a good species, naming it *A. argentea*."—Trevelyan, *l. c.*

**Agrimonia Eupatoria** L. Sp. Pl. 448 (1753). **1551.** "Groweth

amonge bushes and hedges and in middowes and woddes in all countries in great plentye."—Turn. i. 90 (219).

**A. odorata** Mill. Dict. ed. viii. n. 3. **1853.** Found by Prof. Babington and Rev. W. W. Newbould, Sept. 9th, 1852, "on the rocky shore of Lough Neagh, in the county of Antrim"; and about the same time by Mr. Jos. Woods in Devon and Cornwall.—Ann. N. H. Ser. 2, xi. 363.

**Poterium Sanguisorba** L. Sp. Pl. 994 (1753). **1597.** "Wilde upon many barren heathes and pastures."—Ger. 889.

**P. officinale** Hook. **1548.** "Groweth much about Syon and Shene, and in many other places of Englād" (*Bipennella*).—Turn. Names, H j. back.

**Rosa spinosissima** L. Sp. Pl. 491 (1753). **1597.** "Groweth very plentifully in a fielde as you go from a village in Essex, called Graies . . . . unto Horndon on the hill, insomuch that the fielde is full fraughte therewith all over."—Ger. 1088.

**R. involuta** Sm. Fl. Brit. iii. 1398 (1804). **1804.** "In insulis occidentalibus Scotiæ. D. Walker and D. J. Mackay."—Smith, *l. c.*

**R. hibernica** Sm. E. B. 2196 (1810). **1803.** "I first discovered it on the side of the road leading from Belfast to the village of Hollywood."—John Templeton in Trans. Dublin Soc. iii. 163. He first noticed it in 1797: see Stewart & Corry, Fl. North-east of Ireland, 1795.

**R. mollis** Sm. E. B. 2459 (1812). **1804.** "In the way from Edinburgh to Ravelston wood."—Sm. Fl. Brit. ii. 539. Smith (E. B. *l. c.*) quotes "Rosa sylvestris folio molliter hirsuto," &c., of Dillenius (R. Syn. iii. 478, 1724) as a synonym of this species, but the identity of the two seems doubtful.

**R. tomentosa** Sm. Fl. Brit. ii. 539 (1800). **1696.** "In sepibus non infrequens à D. Dale observata."—R. Syn. ii. 296.

**R. rubiginosa** L. Mant. ii. 564 (1771). **1597.** "In the borders of fieldes and woods in most parts of England."—Ger. 1088.

**R. micrantha** Sm. E. B. 2490 (1812). **1812.** "Mr. W. Borrer has communicated to us the present Rose, under the above name. He observes that it is common in hedges and thickets."—Smith, E. B. *l. c.* Borrer sent it to Smith in 1811.

**R. sepium** Thuill. Fl. Par. ed. 2, 252 (1799). **1821.** "Near Bidford Grange (Warwickshire) . . . July, 1818." [W. T.] Bree. —Purton, Midl. Flora, iii. 41. In E. B. S. 2653, and elsewhere wrongly quoted "Bridport."

**R. canina** L. Sp. Pl. 491 (1753). **1538.** "Cynosbatos . . . anglis a wylde heptre, or a brere tre."—Turn. Lib.

**R. stylosa** Desr. Journ. de Bot. ii. 113 (1809). **1808.** "Mr. William Borrer . . . first distinguished this Rose in England . . . [it] is common in Sussex."—E. B. 1895 (as *R. collina*). He sent it to Smith in 1807.

**R. arvensis** Huds. i. 192 (1762). **1667.** "In the fields near Hackney in the way thence to London."—Merrett, 105.

(To be continued.)

## *SHORT NOTES.*

North Wales Plants. — Whilst staying at Beddgelert, North Wales, during last July and August, I met with seventy-five plants not noticed in two visits during the same months in 1889 and 1890, bringing the total number observed for Carnarvon and Merionethshire up to about 390 species. Of this year's plants, the following are either not recorded in *Topographical Botany*, 1883, are new localities, or confirmation of queries :—

*Not Recorded.*—*Carex divisa* and *Elymus arenarius*, both found near Harlech, for 48, Merionethshire; and *Carex pauciflorus*, on the lower hills, on the slope at the eastern base of Moel Hebog, for 49, Carnarvon.

*New Localities.* — *Cynoglossum officinale*, near Harlech, 48, Merioneth; and *Leontodon hirtus*, near Llyn Gwynant, 49, Carnarvon. In confirmation of queries :—*Bryonia dioica*, near Llyn Gwynant. *Hymenophyllum tunbridgense*, on the north side of Dinas Emrys, a hill between Beddgelert and Llyn Dinas, 49, Carnarvon. This last is rare in comparison with *H. unilaterale*, which occurs in several localities. I may mention, in addition, that we met with *Asplenium viride* and *Woodsia hyperborea* in fair quantity on the crags of Moel Cefn, north of Moel Hebog, Carnarvon. — F. C. S. Roper.

Trachelium cœruleum established in Guernsey. — I have this month received fine specimens of this beautiful plant from my friend Mr. Archibald Buchanan Brown, who has been resident in Guernsey for many years. He has known this plant to exist in the same profusion it does at present for quite sixteen years, but, till recently, imagined it was but a colour variety of *Centranthus ruber;* this not unnatural assumption was strengthened by the fact that the specimens grew out of reach, and so the serrations on the leaves were not discernible. It may not be well to give the exact locality; but the plant is abundant at the outskirts of St. Peter's Port, in one or two contiguous places, on old, high, and somewhat ruinous walls. Mr. Buchanan Brown counted at least one hundred and fifty blooms on August 16th. Doubtless, in my opinion, the plant is an established introduction, but when, and by whom, is a problem not likely now to be solved. At all events, the plant is thriving in this locality, has been there very many years, and is likely to increase its area. Old walls seem its favourite habitat in most of the localities it affects, judging from the numerous specimens I have, collected by Huter, Bourgeau, Huet de Pavillon, Janin, Ball, and others from Italy, Spain, and Algeria. The Rev. R. P. Murray, from whom in 1888 I received specimens gathered near Oporto, writes me that it grew plentifully on walls by the River Douro, and that he saw it nowhere else, but was assured it grew on rocks about a mile away.—J. Cosmo Melvill.

Supposed Plant-destruction in the North of Ireland. — Being one of the exterminators referred to in your last issue (p. 318), and further, both conductor of the excursion and winner of the ob-

jectionable prize, perhaps I may be allowed to say a few words. In the first place, those who competed for the prize offered for the rarest twelve plants found were *botanists*, not ignorant grabbers, nor rapacious and unscrupulous collectors, and the rarities of the district were quite safe in their hands. Secondly, only a very limited portion of the huge basaltic cliff-wall of the mountain is accessible even to the most experienced climbers, and botanists can only nibble at the edges, as it were, of the home of alpine rarities, so that there is little fear of the extermination of any of the plants by human hands, however grasping. As a matter of fact, only two of the plants found (*Polygala grandiflora* and *Draba incana*) occurred in really limited quantity, and of each of these only one specimen was brought away. The Belfast Naturalists' Field Club has long enjoyed a well-earned reputation as preservers and protectors of the flora and fauna, as well as the natural beauties and ancient monuments of their district, and this reputation I trust they will continue to deserve.—R. Lloyd Praeger.

[We are quite sure that Mr. Praeger and his friends are not likely to exterminate or in any way endanger the existence of our rare plants. But we are strongly of opinion that, on general principles, the stimulus of a prize for the rarest plants collected on a botanical excursion is unnecessary and unwise. It is unnecessary for the botanist, to whom the discovery of a rare plant is in itself a sufficient reward, and it is unwise to encourage the mere collector to do more mischief than he would do without the prospect of a recompense. We did not understand our correspondent to be making a personal attack upon any botanist or society, or we should not have printed his communication without further enquiry; but the protest, on general grounds, still seems to us timely and necessary. The sale of specimens of rare British plants, if carried on to any extent, is another matter which, as it seems to us, should be discouraged by botanists.—Ed. Journ. Bot.]

Date of Grisebach's West Indian Flora.—Grisebach's *Flora of the British West Indian Islands* bears the date "1864" on its title-page, but, as the work came out in parts, it is desirable to ascertain the respective dates as to the publication of genera and species contained therein. I have not seen a copy in the original wrappers, but have compiled a record of the dates as follows, with my authorities:—Part 1, pp. 1–96, in 1859; see Bot. Zeit. xix. (1861), p. 239. Part 2, pp. 97–192, in the same year; see Silliman, Am. Journ. Sc. ser. 2, xxxi. (1861), i. p. 129. Part 3, pp. 193–322, in 1860; see Silliman, Am. Journ. Sc. ser. 2, *l. c.*, and Bot. Zeit. *l. c.* p. 296. Parts 4 and 5, pp. 323–506, came out in 1861, according to a note of Dr. Garcke's in the Berlin Royal Herbarium Library, communicated by Dr. Urban; see also Silliman, Am. Journ. Sc. ser. 2, xxxiv. (1862), ii. p. 288. Parts 6 and 7, pp. 507–789, completing the work, were issued in 1864; see Silliman, Am. Journ. Sc. ser. 2, xxxix. (1865), i. p. 108.—B. Daydon Jackson.

Sark Plants.—During a visit to the island of Sark, towards the end of August this year, I noticed the following plants, which are not recorded in Prof. Babington's *Primitiæ Floræ Sarnicæ*, nor in

the lists of Sark plants noted by Dr. M. Bull in this Journal for 1872 and 1874. I have, as on former occasions, to thank Mr. Arthur Bennett for help in determining the plants:—*Papaver Rhœas.* One plant on waste ground.—*Cardamine hirsuta.*—*Raphanus Raphanistrum.* One plant, Little Sark.—*Viola arvensis.*—*Polygala serpyllacea.*—*Saponaria officinalis.* On banks, &c., in several places, but always near houses.—A form of *Hypericum decumbens* Peterman. This plant seems common in the northern parts of Guernsey.—*Trifolium agrarium.*—*Lotus corniculatus* var. *crassifolius. Vicia uncinata.* Lane near the Gouliot Caves.—*Potentilla Anserina.*—*Valerianella carinata.*—*Tanacetum vulgare.* Orchard La Tour, &c.—*Arctium minus.* Near Crex Harbour.—*A. intermedium.* Baker's Valley.—The rayed form of *Centaurea nigra* was noticed sparingly both in Sark and Guernsey. In the district of Somersetshire round Winscombe and Cheddar, the rayed form is common to excess. Indeed, I have not noticed any plants of typical *C. nigra.*—*Borago officinalis.* Frequent on waste ground.—*Cuscuta Epithymum.* One good-sized patch near the Coupée, on *Anthemis nobilis*, *Lotus corniculatus*, &c.—*Solanum Dulcamara* var. *marinum.*—*Veronica persica.* Plentiful in churchyard.—*Orobanche rubra.* I gathered two other Orobanches in Sark which seem very probably new to Britain, but the plants were too far gone for Mr. Bennett to determine these with certainty this year.—*Mentha sativa.*—*Atriplex patula* var. *erecta.*—*Euphorbia exigua.*—*Ruscus aculeatus.*—*Aira caryophyllea* var. *aggregata.*—*Briza maxima.* A few plants on waste ground.—W. F. Miller.

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## *NOTICES OF BOOKS.*

*The Genus Masdevallia.* Issued by the Marquess of Lothian, K.T. Plates and descriptions by Miss Florence H. Woolward. Part III. Folio. £1 10s. London: Porter.

Descriptions of new species of orchids, singly or in decades, are met with in almost every number of every periodical devoted to the interests of the systematic botanist or horticulturist. The species may be good or bad, but in either case the little paragraphs of condensed technicalities have a drearisome sameness. Personal vanity may be flattered, but the science is not much helped by this diffuse propagation of species, many of which will probably disappear or take the inferior rank of varieties when another Lindley shall arise to rearrange the whole order. If we wait to discover all the species first, we shall never start on their arrangement in genera.

In the prevalence of this tendency, it is pleasant to find a lady attempting and successfully carrying out work of the higher and more useful order. The present number of Miss Woolward's work contains the third decade of her illustrations and descriptions of the species of *Masdevallia.* As in the two previous parts, the ten species here brought together have no necessary connection other

than that of belonging to the same genus; on the other hand, they serve admirably to illustrate the surprising variety of forms which are yet more or less closely related, as is proved by an examination of the dissections accompanying the life-size drawings of each plant. These dissections are uniform throughout the work, and include those parts which are considered of value for specific distinction, namely, the column, labellum and petals; while a section of the flower, also enlarged, shows the relative position of all three. A section of the ovary, and views of the apex and section of the leaf, are also given.

We understand that the colouring of the flower on each individual plate has been copied not merely from the original sketch, but, whenever possible, a living specimen has been placed before the colourist. *Apropos* of colour, the prevalence of a rich crimson lake is especially noticeable; it seems, in fact, a constant characteristic of the genus. It forms the groundwork for the gorgeous expansions of the *bella* section, showing up in striking contrast the delicately worked shell-like white labellum here so unusually developed; it spots and streaks the light, often greenish, sepaline cup of the *coriacea* group; while in species like *Davisii*, with its golden-yellow spreading sepals, or its brilliant scarlet or often almost magenta-coloured ally, *coccinea*, it lurks in the interior of the flower, bespattering the tip of the labellum, or tinging the keel of the petal or the membranous wing of the column. Obviously it indicates the common descent of all the Masdevallias, and was the original colour of the ancestor, remaining, like the zebra-like stripes on the young horse or donkey, in the more protected or essential parts of the flower; while the much larger, more exposed spreading sepals have often in the course of variation and production of species altogether discarded it, or retain only traces. We have not seen the pure white variety of *coccinea* mentioned in the text, but we are confident the crimson line would be found winging the column, or staining, however slightly, the labellum or petaline keel.

Part iii. contains the following ten species:—*M. Arminii*, *Carderi*, *caudata*, *coccinea*, *coriacea*, *Davisii*, *Estradæ*, *polysticta*, *triangularis*, and *Wageneriana*, arranged as indicated, in alphabetical order. As stated at the commencement of her task, Miss Woolward intends, when it is complete, to provide an arrangement of the species in sections, and it is presumed that subscribers will follow this arrangement in binding, as each plate and description are distinct from the rest. This method of publication has one disadvantage, for, as it is not possible at the commencement to know all the species procurable for illustration, no number can be assigned to the individual plates, which is unfortunate as regards purposes of reference.

Of the ten species, *M. Arminii* and *M. triangularis* are here figured for the first time. The former, described by Reichenbach in 1854 from specimens collected by Louis Schlim, is a native of Colombia and the Andes of Ecuador. In the internal structure of the flower it differs from other species in a remarkable projection

on each side of the base of the column. *M. triangularis* of Lindley, discovered by Linden in 1842, inhabits the central mountains of Venezuela, according to a note sent by Consul Lehmann. *M. caudata* Lindl. (= *M. Shuttleworthii* Rchb. f.) is a well-known species, as is also *M. coccinea*, though usually seen under its colour forms, *Lindeni* and *Harryana*. The plate of *M. coriacea* is enriched by figures of the seed-capsules, drawn from specimens preserved in the Boissier Herbarium near Geneva, which were kindly lent to the author. This species is interesting from the large nectaries at the base of the lip, of which a good figure is given. Miss Woolward reduces *M. ludibunda* of Reichenbach to a variety of *M. Estradæ* of the same author:—"The flowers of the variety are rather larger, and the colours paler than in those of the type"; while "the dorsal sepal is less erect and more concave, and the wings of the column straighter and narrower." It seems probable that the number of the Hamburg professor's species will be considerably reduced by the end of the twenty-five years for which his types are to remain sealed up. A figure of the variety is included in the plate of *Estradæ*.

We cannot conclude without congratulating the author on a few improvements on previous parts. The illustrations are free from the slight stiffness sometimes apparent in the earlier plates, and seem altogether to have more feeling, as if the artist were getting more in sympathy with the actual plants as the work progresses. Miss Woolward, who is responsible for the whole of the work, has overcome the unfortunate modesty which did not previously allow of her name appearing on the cover; and Consul Lehmann's name no longer figures at the end of each description, making him, to the careless observer, responsible for the whole, while his valuable assistance as regards the habitat of many of the plants is still amply acknowledged. We hope soon to see Part iv., which we understand is well forward.

A. B. Rendle.

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*Lithograms of the Ferns of Queensland.* By Fredk. Manson Bailey, F.L.S., &c. Brisbane, 1892. Pp. 7, tt. 191.

Mr. Bailey is active in his work on the vegetation of Queensland. Single-handed and alone in that portion of the great Australian continent, he is doing for Queensland what Bentham and Von Mueller accomplished for the whole land in the *Flora Australiensis*. His *Synopsis of the Queensland Flora*, published nearly ten years ago, is a creditable work, and in the subsequent Supplements he exhibits evidence of his more critical acquaintance with the Flora. In the volume before us he gives illustrations of the known ferns of Queensland. The plates are nature prints by a process which produces what he calls *lithograms*. The result is not very satisfactory. The general aspect is given, but the venation, on which so much necessarily depends in the determination of ferns, can seldom be detected on the plate. The page used being 8vo, has compelled Mr. Bailey to give only fragments of the fronds in a large number of cases. As he has kept before him economy in the

production, and the consequent small price of the work, it would not have been possible to have used a quarto page, but this would have given scope for the production of more characteristic portions of the plant. However, Mr. Bailey has given to the fern-lovers of Queensland, for whom he has prepared the volume, a work that they will find of the greatest practical value, and to scientific botanists it will be useful because of figures of the new species which the author has already described, as well as of many varieties which he distinguishes from the normal forms of known species. No one knows better than Mr. Bailey that there is yet much to be done in the critical examination of the Queensland plants, and in other orders more than the Ferns. Yet even here the use of some of the more recent monographs will throw light on these plants. For instance, Prantl's revision of *Ophioglossum* shows that in the first plate, under *O. vulgatum* and two named varieties, he has three species. The principal figure is most probably *O. reticulatum* Linn., the var. a. is *O. Luerssenі* Prantl, and var. b. is *O. lanceolatum* Prantl. Nevertheless we have nothing but praise for Mr. Bailey's book, and we trust he may long labour in the field in which he has already done such good work.

W. Carruthers.

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## *ARTICLES IN JOURNALS.*

*Bot. Centralblatt.* (No. 40).— P. Kunth, 'Die Blüteneinrichtung von *Corydalis claviculata*.' — (No. 41). K. Fritsch, 'Zur systematischen Stellung von *Sambucus*.' — (No. 42). H. Eggers, 'Die Manglares in Ecuador.'

*Bot. Gazette* (Sept. 15). — C. Robertson, 'Flowers and Insects.' —F. Renauld & J. Cardot, 'New Mosses of N. America.'—(Oct. 15). L. M. Underwood, 'Hepatic Flora of boreal and sub-boreal regions.' —H. L. Russell, 'Bacterial investigation of the sea and its floor.' —E. L. Berthoud, 'Plant Dissemination.' — E. B. Knerr, '*Erythronium*.'—C. W. Hargitt, '*Daucus Carota*.'—M. Reed, 'Cross- and self-fertilization.'

*Bot. Zeitung* (Sept. 16). — W. Benecke, 'Die Nebenzellen der Spaltöffnungen' (concl.). — (Sept. 23). E. Zacharias, 'Ueber die Zellen der Cyanophyceen.' — F. Schmitz, 'Knöllchenartige Auswüchsl an den Sprossen einiger Florideen.' — (Sept. 30, Oct. 7). F. Krüger, 'Ueber die Wandverdickungen der Cambiumzellen.'— (Sept. 30). J. Wortmann, 'Notiz über Wasserculturen.'

*Bull. Torrey Bot. Club* (Sept.). — N. L. Britton, Rusby's N. American plants. — A. F. Foerste, 'Casting-off of tips of Branches' (1 plate).—L. M. Underwood, 'Hepaticæ of Labrador.' —(Oct.). L. M. Underwood, 'Additions to Hepatic Flora.'—W. T. Davis, 'Oaks on Staten Island.'—E. N. Plank, '*Buchloe dactyloides* not dicœcious.' — E. J. Hill, 'Rhizomes of *Penthorum*.' — C. Mohr, 'Variations in leaves of Clematis' (1 plate).—F. V. Coville, '*Juncus Cooperi*.'

*Gardeners' Chronicle* (Oct. 1). — *Calanthe Sanderiana* Rolfe, *Cusparia undulata* Hemsl., spp. nn. — 'Cleistogamy.' — (Oct. 8). *Peperomia inquilina* Hemsl., sp. n. — R. A. Rolfe, '*Galeandra*.' — (Oct. 24). *Albuca Buchanani* Baker, sp. n.

*Journal de Botanique* (Sept. 1–16). — A. Franchet, 'Les Lis de la Chine et du Thibet.' — J. Huber, 'Sur la valeur morphologique et histologique des poils et des soies dans les Chætophorées.'— (Oct. 1). E. G. Camus, 'Monographie des Orchidées de France.' —P. Viala & C. Sauvageau, 'La Brunissure et la Maladie de Californie.' — L. Mangin, 'Propriétés et réaction des composées pectiques.'—(Oct. 16). J. Vesque, 'La tribu des Clusiées.'

*Journ. Linn. Soc.* (xxix. No. 202: Oct. 12). — D. Morris, 'Forked and Branched Palms.' — W. B. Hemsley, 'Botanical Collection made by Mr. A. E. Pratt in Western China' (5 plates). —J. Mueller, 'Lichenes Epiphylli Spruceani.' — H. B. Guppy, 'The Thames as an agent in plant dispersal.'

*Nuovo Giornale Bot. Ital.* (Oct. 1). L. Nicotra, 'Elementi statistici della flora siciliana.'

*Oesterr. Bot. Zeitschrift.* (Oct.).—K. Fritsch, 'Nomenclatorische Bemerkungen.'—H. Braun, *Thymus glabrescens* Willd.—L. Charrel, 'Plantæ ann. 1888–91 in Macedonia collectæ.'—J. Freyn, 'Plantæ novæ Orientales' (*Hieracium armenium*, *Verbascum caudatum*, *V. stachydifolium*, *V. nitidulum*, *Scrophularia Bornmulleri*, *Salvia yosgadensis*, *S. Freyniana*, spp. nn.).

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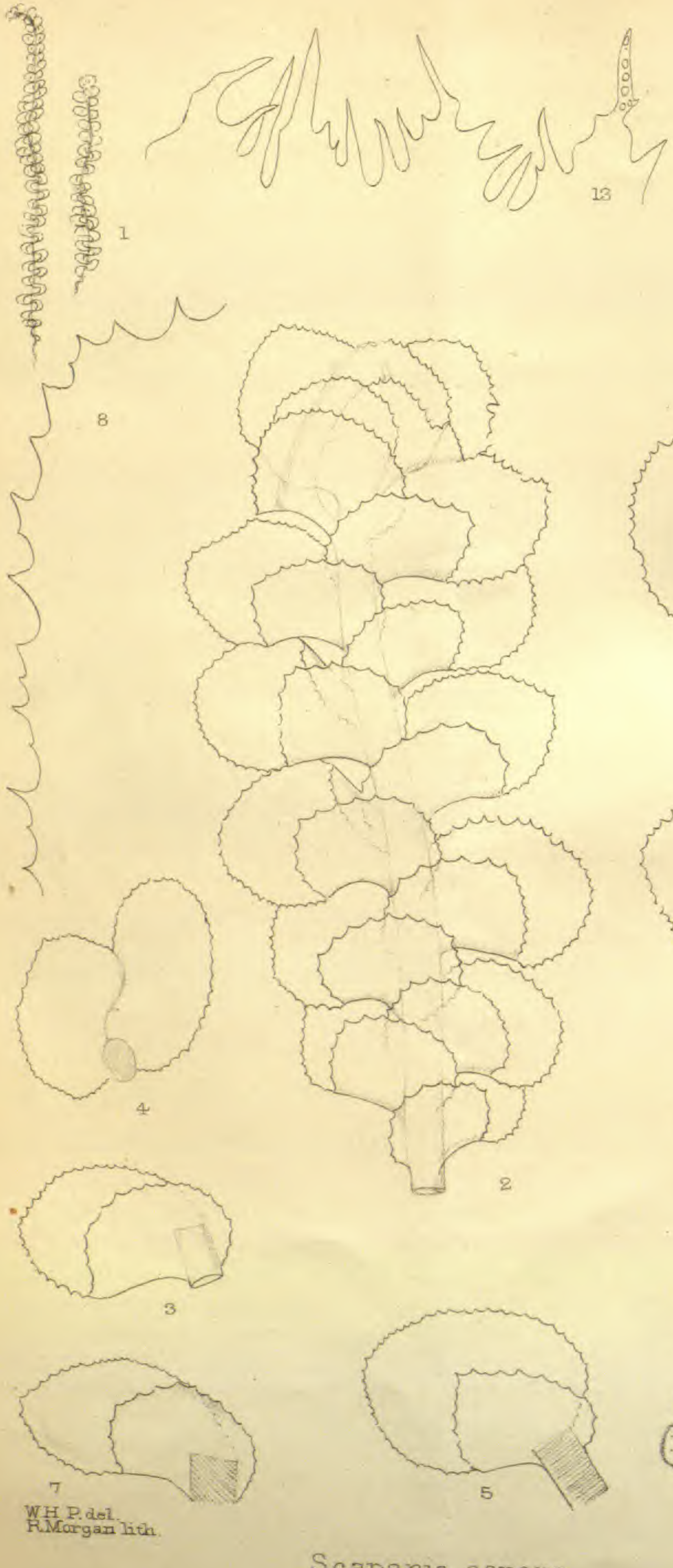
## *BOOK-NOTES, NEWS, &c.*

The Botanical Department of the British Museum has acquired a very complete set of Hepatics, consisting of nearly 500 specimens, collected by the distinguished botanist, Richard Spruce, during his travels on the River Amazon and the Andes of South America, between the years 1849 and 1862. They were monographed with the great accuracy and genius which characterise all Mr. Spruce's work, in the *Hepaticæ of the Amazon and of the Andes of Peru and Ecuador*, 1885, Trübner (*Transactions and Proceedings of the Botanical Society of Edinburgh*, vol. xv.). We may mention that Mr. Spruce has undertaken to name the Hepatics collected in the islands of St. Vincent and Dominica by Mr. W. R. Elliott for the West India Committee.

The second part of *Phycological Memoirs* is announced as in preparation: it will contain papers on the structure and systematic position of *Halicystis*, by the Editor, Mr. George Murray; on the structure and development of *Notheia anomala*, by Miss Mitchell; on a comparison of the marine floras of the warm Atlantic and Indian Ocean, by the Editor; on West Indian Algæ, by the Editor; and Notes on *Fucaceæ*, by Miss A. L. Smith, Miss Barton, and Miss F. G. Whitting.




W.H.P. del.
R.Morgan lith.

West, Newman imp.

Scapania aspera.

# A NEW BRITISH HEPATIC.

By W. H. Pearson.

(Plate 329.)

Scapania aspera Müller & Bernet; Henri Bernet, *Catalogue Hep. du Sud-Ouest de la Suisse et de la Haute-Savoie*, 1888.—Dioicous, loosely depresso-cespitose, of a reddish or olive-brown colour. Stems tallish, simple or slightly branched, firm, blackish, recurved at the apex, denudate at the base, radiculose; rootlets few, whitish. Leaves transversely inserted, somewhat smaller and distant below, contiguous or imbricate above, subsecund, unequally bilobed, margin ciliate-dentate; postical lobe more distinctly ciliate, about twenty-five cilia around the margin; antical lobe with five to ten more distant teeth, about half the size of the postical, convex, oval-triangular, rotundate or rarely abruptly subacute, appressed to the stem, postical lobe oval-oblong, rotundate or rarely abruptly subacute, reflexed; texture somewhat firm, epidermis verruculose, several minute papillæ on each cell; cells small to rather minute, subquadrate, walls thick, angles thickened, no trigones. Bracts rather larger than the upper leaves, lobes more equal, antical lobe rotundate. Perianth projecting half beyond the bracts, obovate, compressed, mouth wide, truncate, spinose-ciliate. Male stems more slender, perigonial bracts enclosing leafy paraphyses along with the antheridia. Sometimes gemmiparous.

Dimensions.—Stems about 2 in. long, ·5 mm. diam., with leaves 5· mm. wide; branches ·25 mm. diam., with leaves 2·75 mm. wide; Leaves, antical lobe 1·5 mm. × 1· mm., postical lobe 2·5 mm. × 1·75 mm., antical 1·5 × 1·, postical 2·5 × 1·5, antical 1·75 × 1·25, postical 2·25 × 1·25, cells ·02 mm., ·0175 mm., cilia of postical lobe ·05 mm.; bracts, antical lobe 2· mm. × 1·5 mm., postical 2·5 mm. × 1·5 mm.; perianth 3·5 × 2· mm. wide at the mouth, laciniæ of the mouth ·275 mm., cilia of the same, ·1 mm.

Habitat.—Growing on limestone rocks. 2. Hill above Studland, Dorset, *E. M. Holmes*, 26th April, 1884. 7. Near Aber, Carnarvonshire, *G. E. Hunt*, May, 1868 (Herb. Spruce). Tower Hill, Abergele, Denbighshire, *W. H. Pearson*, August, 1892. 10. Bolton Woods, Yorkshire, *Dr. Carrington*, July, 1877. 12. Yewbarrow, Westmorland, *George Stabler*, Nov., 1869.

Found on the Continent (Sweden, Switzerland, Germany, Austria, Italy).

Exsicc. G. & R. Hep. eur. n. 92 (as *Scapania nemorosa*), n. 334 (as *Scapania nemorosa*), n. 602 (as *Scapania æquiloba forma dentata*), Massal. Hep. it. ven. n. 62 (as *Scapania æquiloba* var. *dentata*).

Obs.—"*Scapania aspera* has nothing in common with *Scapania æquiloba*, except its tuberculose cuticle; it approaches nearest to *Scapania nemorosa*, with which it is constantly confounded, but it is distinguished from the last by its more slender stem, the shorter cilia of the leaves, the shape of the cells, the tuberculose cuticle, and lastly, by its calcareous habitat. *Scapania nemorosa vera* is only found on silicious earth." Bernet, *Cat. Hep. Suisse*, p. 43.

Although strikingly different in habit from *S. æquiloba* (Schwaeg.), I am not prepared to say, with the founder of the species, that it has nothing in common with it; the perianth has usually a wider mouth, but the margin is exactly the same; and although the antical lobe is proportionately smaller and more rotundate at the apex, yet in *S. æquiloba* the lobes are not nearly so equal as the name would imply, the most marked characters of distinction are found in the antical lobes, which in *S. aspera* are more or less rotundate at the apex, which character becomes more noticeable in the bracts, whereas in *S. æquiloba* they are more oblong and subquadrate, and the apex is more acute and becomes more accentuated in the antical lobe of the bract; the postical lobes are also more oblong and acuminate; the postical lobes of both the leaves and bracts are strongly recurved.

*S. æquiloba* is a smaller plant with a neater habit, generally of a darker olive-green colour, leaves regularly inserted and almost equal in size along the whole stem, margin not so ciliate, teeth smaller and fewer, sometimes subentire, texture more opaque.

In the abundant material lately collected at Abergele, I thought I might find specimens showing a transition from *S. aspera* to *S. æquiloba*, but even in small plants I always find the same characters which enable it to be distinguished.

It will probably be found in herbaria, either under the name of *S. æquiloba* or *S. nemorosa*. Dr. Gottsche named it, in G. & R. *Hep. Eur.* n. 602, *Scapania æquiloba forma dentata* (1874); and Limpricht, in *Cohn Krypt. Fl. Schles.* (1876), expressed an opinion that it was probably a distinct species, nearly allied to *S. resupinata* (L.) (*S. gracilis* Lindb.), but from which it is at once distinguished by its verruculose leaves.

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Description of Plate 329.—Fig. 1. Plants nat. size. 2. Portion of young branch × 16 (Yewbarrow, G. Stabler). 3. Leaf × 11 (G. & R. n. 602). 4. Ditto, explanate (ditto). 5, 6. Leaves × 11 (Sweden, Kindberg). 7. Leaf × 11 (G. & R. n. 602). 8. Margin of leaf, postical lobe × 85 (ditto). 9. Portion of leaf × 290 (ditto). 10. Bract × 11 (Yewbarrow, G. Stabler). 11. Ditto, explanate (ditto). 12. Perianth × 11 (Sweden, Kindberg). 13. Portion of mouth of perianth × 85 (Yewbarrow, G. Stabler).

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# NOTES ON THE FLORA OF BRECONSHIRE.

By Reginald W. Phillips, M.A., B.Sc.

On comparing my notes of a visit to Talgarth during the first week of August of this year, with the very useful list of plants drawn up by Mr. W. Bowles Barrett in his 'Contribution towards a Flora of Breconshire' (*Journ. Bot.* 1885), I find I am able to add some new plants to this list, as well as furnish new stations for several other plants inadequately reported upon. I ought to add that my observations were confined to a circuit of three or four miles round Talgarth, which lies on the old red sandstone, and in

the Llynvi Valley. In one or two instances I am recording observations made on the occasions of previous visits.

New Records.—The following are new records for the county, or at any rate had not been recorded on the publication of Mr. Barrett's list seven years ago:—

*Malva rotundifolia* L. Roadside, Llangorse village.
*Euonymus europæus* L. Frequent near Talgarth; Hay Road.
*Rhamnus Frangula* L. Llangorse Common.
*Viscum album* L. Common on apple trees and poplars near Glasbury village.
*Picris hieracioides* L. Hay Road, near Porthamel, Talgarth.
*Matricaria Chamomilla* L. Fallow land, Dulas Valley.
*Anthemis arvensis* L. Fallow land, Dulas Valley.
*Polemonium cæruleum* L. Bridge near Wernbedd Mill.
*Verbascum Thapsus* L. Roadside, Pipton.
*Lathræa Squamaria* L. Near Wernbedd Mill. This plant has not been seen by me, but Mr. Thomas Boucher has noticed it year after year in the same situation. From *Top. Bot.* it would appear not to have been reported from any other county in the South Wales province, excepting Glamorgan.
*Ballota nigra* L. Common on roadsides near Bronllys Castle Bridge.
*Paris quadrifolia* L. Llan Wood, Llandefalle.
*Colchicum autumnale* L. Common in pastures near the foot of the Black Mountains.
*Ophioglossum vulgatum* L. Cwm Pwllwrach, Talgarth.

New Localities.—The following are new stations for plants recorded by only one observer, or from only one locality:—

*Berberis vulgaris* L. Roadside, Gwernyfed Farm, but almost certainly introduced.
*Papaver Rhœas* L. Not infrequent on arable land near Talgarth.
*Hypericum dubium* Leers. Roadside near Llangorse.
*Geranium pratense* L. Common near Velindre; Pipton.
*Reseda Luteola* L. Banks of Enig, Talgarth. This report is confirmatory of *Top. Bot.*
*Vicia tetrasperma* Moench. Roadside near Pontybat.
*Bryonia dioica* L. Common near Velindre and Tregoyd.
*Ægopodium Podagraria* L. Common. Tregoyd.
*Conium maculatum* L. Not common. Bronllys, Velinewydd.
*Asperula odorata* L. Cwm Trapau.
*Symphytum officinale* L. Common along Llynvi below Talgarth.
*Scutellaria galericulata* L. North end of Llangorse Lake.
*Lamium album* L. Llyswen, scarce.
*Humulus Lupulus* L. Common near Talgarth, apparently indigenous.
*Listera ovata* Br. Llan Wood, Llandefalle.
*Habenaria bifolia* Br. Pasture near Wernbedd Mill.
*Juncus supinus* Moench. var. *fluitans* Fr. Llangorse Lake.
*Carex hirta* L. North end of Llangorse Lake.

# BOTANICAL COLLECTING IN THE TROPICS.

By G. F. Scott-Elliot, M.A., F.L.S.

There is nothing so easy as plant collecting, provided one follows a few simple and easy rules, for want of which the collector may waste a great deal of time and trouble. Perhaps the result of my experience in Madagascar, West Africa and the Transvaal, may be of use to other travellers. The first important point is to know what sort of specimens are required. The usual size of herbarium sheets is about 18 in. by 11, and the specimens should under no circumstances be too large for such a sheet. In the case of herbs and small shrubs, the best method is to pull up the whole plant. Most small shrubs and herbs are hemispherical in outline, and in the case of very bushy shrublets or very vigorous herbs it is best to cut off most of the outside branches, so as to obtain a median section of the plant. Large shrubs and trees should be represented by a flowering or fruiting branch about a foot long, containing both flowers and typical foliage. Specimens without flowers or fruit are useless, and the only excuse for bringing them is when they are of great commercial or medical importance.

The necessary articles of outfit are paper, frames, two or three pairs of strong gardener's or wirecutter's scissors, naphthaline and tin boxes. The paper I have found most satisfactory is that sold by West, Newman & Co.; there are two kinds, the thin and the thick, and I find an equal weight of each very convenient. I cannot recommend the brown paper supplied by Kew, although I believe others have spoken very highly of it. The best frames, to my mind, are made in Germany, and not sold, to my knowledge, by any firm in England; I must therefore describe them and recommend travellers to resort to the British blacksmith, who will generally carry out instructions satisfactorily.

The frames are double, each consisting of an outer edge formed of iron lathe about three-eighths of an inch in thickness and one inch broad; these are joined together to form an oblong the size of the paper employed or a little larger (*i. e.*, about eighteen inches by twelve inches). This lathe is simply an edge, and is completed by a set of wires passing lengthwise and across, so as to cover the space with an iron network, of which the meshes are about half an inch square; these wires should end in holes bored in the lathe, In each frame one half should have four strong chains about six inches long, fixed to the longer sides (two to each longer side about four inches from either end); the other half should have four hooks placed in corresponding positions, on to which the chain-links (preferably square) should fit; the hooks are best made of a triangular piece of iron about an inch long, riveted on to the iron lathe and turned up at the tip. A pile of papers with plants in them is placed on the chain-frame and the hook-frame is placed upon them; the chains are then pulled up and slipped over the hooks; it is best to stand on the frame while doing this, so as to get the plants as strongly pressed between the two as possible. Once the

frame is thus hooked, the elasticity of the iron and wires keeps up a sufficient gentle pressure, and no weights or straps of any kind are required. The smaller one can keep the piles in each frame, the quicker the plants dry, and hence it is best to have at least four, or, if possible, six or eight of these double frames; the weight of each is, moreover, very trifling.

In drying plants, the object is to get rid of the moisture in the tissues as quickly as possible, and at the same time to keep the leaves and flowers flatly pressed, so that they shall not shrivel. In a dry climate such as the Karoo, practically no care is required, but in a humid and moist atmosphere there is danger that the moisture is not withdrawn from between the papers, and hence mould and decomposition rapidly set in. I have found it best to keep the frames carefully packed in tin boxes until about 10 a.m., when the sun has practically dried the air. The frames should then be brought out and left in strong sun till about 3 or 4 p.m., and all the paper not in use should be carefully dried at the same time; this is most easily done by scattering them on dry ground two or three together. At 4 p.m. the plants should be taken out of every frame and put in fresh papers; all the frames and papers being put back in their tin boxes till next morning. The reason of this is, that immediately the dew begins to fall everything becomes moist; the paper sucks in moisture, and no drying is possible. A servant can easily be trained to do this mechanical work, but it is necessary to watch an ordinary native boy. After a plant has been subjected to this daily change for a week or so, the leaves will become brittle, and it is then dry. The finished specimens should be packed up in bundles of fifty, in any kind of paper, tied round with string, and pinches of naphthaline should be strewed over each specimen. The paper should be carefully dried beforehand, and the bundles packed in tin boxes and left there till they delight the eyes of the Museum at home. Of course, in the event of such a box having been upset into a river or exposed to severe rain, it must be examined and the plants dried over again; but if the edges of the box fit properly, and there is plenty of naphthaline, they may be safely left alone.

In the rainy season within the tropics, when the air is always moist, the only method I found of use was to substitute for the sun a wood fire, kept going for six or seven hours, and to suspend the frames (rather loosely chained) over the fire with their edges towards the ascending hot air. I managed to dry good specimens of *Anthocleista* in three days by this method, but it is very troublesome, and the plants are sure to be discoloured. Plants with fleshy leaves should not be collected whilst travelling, as they cannot be properly dried and are apt to spoil their neighbours. An exception must be made with orchids, however, and with these it is best to treat the flowering spikes as ordinary specimens, and to kill the leaves and bulbs in boiling water and then to dry them by exposure (without paper) in the sun, before passing them through the press.

Another point of practical importance is to carry a large stock

of luggage-labels of the smallest possible size. These labels should be numbered consecutively, from one onwards; and when a plant is gathered, a label with notes of the place, date, and kind of habitat, native name, &c., should be tied to it. This obviates the necessity of any other kind of note-taking, though a diary of notes is always valuable. My experience is that great use can be made of natives, *provided* you give them something for every plant they bring in; in every twenty or thirty native porters there is sure to be one good collector, usually, in my experience, somewhat cranky in his ideas and a bad character. Even the best servant will not work for you if you pay him by the day, and an expenditure of a halfpenny for each specimen will only amount to something like five shillings per hundred specimens. Care should be taken that the man who is doing his best should not be discouraged.

Some naturalists take a supply of spirit for succulent plants and fungi; personally I have avoided this because it always means difficulty with custom-house officials, and because glass or stone bottles are almost certain to break; while iron tanks or boxes are too heavy to carry if expense is to be avoided.

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## SOME SCOTTISH WILLOWS.

By Edward F. Linton, M.A., and Wm. R. Linton, M.A.

Nearly all the willows here mentioned were observed during two visits to Clova, in the county of Forfar, in 1889 and 1890, and our paper might fairly have been entitled "The Willows of the Clova District." The valley, from one to three miles below the Kirk and the Inn, gave very interesting study in complications between the *Capreæ* and *S. phylicifolia*, *S. nigricans*, and *S. repens*. Glen Fiagh maintained its high reputation for rare plants in the excellence of the willow hybrids it yielded. Taking in Glen Doll, which, however, adds nothing to Glen Fiagh, it will be found a remarkably rich district, in spite of the absence of *S. Arbuscula* L., and the rare occurrence of *S. reticulata* L.

Many of the willows here dealt with have been studied in cultivation, and have been grown in two very different soils, deep and heavy at Shirley, sandy and peaty but of necessity improved by admixture at Bournemouth. The former has favoured vigorous vegetative growth, the latter rapid and abundant development of flowers. It is needless to point out the advantages of this bifarious mode of treatment. Strange to say, the light sandy soil has proved no impediment to the growth of willows; the presence of peat in the soil has been an assistance to some, e. g., *S. Lapponum;* and any descriptions that have had to be drawn from cultivated specimens for the purposes of this paper have by preference been taken from Bournemouth-grown specimens, as deviating the least from what would have been developed in a natural situation.

The chief difference that strikes us between the wild and the

cultivated specimen is the apparent denudation of the leaf, the disappearance of the downy or hairy clothing of the young leaves and twigs in cultivation. But this is more apparent than real, though perhaps real to some extent. In cultivation the leaf-surface is much increased, it may be by three or four times; and if the number of hairs on a leaf remains stationary, the larger leaf of cultivation will appear to be three or four times less hairy than the wild leaf. The same explanation applies to the twig, which elongates in cultivation.

Wild specimens of a few of the following willows have been formerly sent to Dr. White by one of us, and his opinion is usually given in each instance in which it assisted us to a determination. In particular we owed to him the naming of our *S. aurita* × *Myrsinites*.

The hybrids are mentioned in an order partly natural, partly alphabetical. The two originating species are named in alphabetical order, to designate each hybrid; and the hybrids are arranged in the order of the first named of the two species, as they stand in the *London Catalogue*.

*Salix cinerea* × *phylicifolia*.—(1) About a mile below the Inn at Clova; a good intermediate form; fruit not seen on original bush, the leaves of which were uniformly small, 1–1½ in. long, and much spotted and blotched by the punctures of small larvæ. Leaves covered with silky hair when young, but soon glabrescing; glaucous beneath; margin regularly serrate. Under cultivation the main features are as follows:—Young shoots more or less pubescent at first, but glabrescent, reddish brown when fresh, but drying dark brown; leaves 2–3 in. long, on petioles ⅓–½ in., puberulous above, oblong-ovate, acute, pubescent only while young; margin crenate, serrate, nearly flat. Catkins about 1½ in. long, with 3 or 4 leafy bracts; ovary narrow conic-ovoid, very silky; style moderately long; stigmas moderate; scale narrow, obovate, blunt or rounded at their top; nectary about half the length of the short pedicel. (2) Another plant from the same part of the valley has fruit (in cultivation) of *S. phylicifolia*, and no evidence in the catkin of any other origin, except the scale, which is that of *cinerea;* but in the leaves the *cinerea* element is the most obvious, and when found, without fruit, the bush was taken for a *cinerea* variety. We consider this hybrid not uncommon in this part of the valley; a fine bush also grows at the east end of the foot-bridge near the Kirk at Clova, which comes very close to the first-mentioned form. A male bush is in cultivation at Shirley, which was brought from some part of this same valley.

*S. cinerea* × *nigricans* (*S. strepida* Schleich.).—Of this we have specimens (but no root) from a large bush low down in Glen Lochay, near Killin, in which the *cinerea* influence comes out strongly in the wood, leaves, and stipules; while *S. nigricans* is no less obvious in the colouring of the leaves, both in the fresh and dried state. We have also a plant in cultivation of this hybrid, just intermediate, from Glen Lyon, a few miles above Fortingal, Mid-Perth. With these we may mention a plant (male) which is

neither exactly *S. strepida* nor yet *S. aurita* × *nigricans*, from the Clova Valley, about a mile below the Inn; in cultivation the *aurita* element is more clearly present than *cinerea*, as evidenced by the strongly waved leaf-serration and twisted tip, a certain arching in the stipule, and the short catkin; but there are modifications in the foliage and twigs which make it pretty clear that this plant is *S. lutescens* × *nigricans*.

*S. aurita* × *cinerea* (*S. lutescens* Kern.). — Two forms from the Clova Valley. One with rather short obovate leaves from Bradoonie; another with long leaves nearly oblanceolate from a mile south of Clova.

*S. aurita* × *phylicifolia* (*S. ludificans* F. B. White). — Dunbeath Strath, Caithness. The foliage of this plant does not differ much from some forms of *S. phylicifolia*, though both leaves and stipules are influenced in some degree by the other parent; but in the catkins, some of which were over and some in good condition, *aurita* preponderates, the style being moderate in length, the stigmas small, the scales narrow oblong and scarcely discoloured upwards; the catkin itself being of about the average size for *aurita*, and short and small for *phylicifolia*. In specimens sent us by Mr. J. T. Johnstone from "ditch at the foot of the Kerr, Dumfriesshire," the leaves are exactly intermediate, obovate-oblong to narrow ovate, narrowed to the petiole, and more or less rugose; the catkins are small as in the last, but the ovaries, grey-pubescent in both cases, are more closely packed in this, and the scale is much darkened upwards and subacute. We have received another specimen of this hybrid through the Bot. Exch. Club, collected some years ago by Mr. Richard McKay in the Possil Marsh, Lanarkshire, which in its twigs and the lower leaves on the twigs recalls *phylicifolia* strongly, but the upper have the shape and serration of broadly obovate-leaved forms of *S. aurita*, and the ovaries are just those of *aurita*, except for the style.

*S. aurita* × *nigricans* Heidenreich. — Besides one or two other gatherings we have previously published, we have this from the Clova Valley, obtained from the part of the valley already referred to as good for willows, a mile or so below the Inn. This has the leaf-characters that we have noticed before in this hybrid, the young leaves being clothed with dense silky pubescence, much of which rapidly falls off; the older leaves are slightly pubescent, but not obviously so. The young twigs similarly are densely clothed with deciduous pubescence.

In connection with this last, we place on record a very curious combination, which will seem incredible, a triple hybrid formed from *S. aurita*, *S. Myrsinites*, and *S. nigricans*. The locality is the puzzle, not the co-existence of these three in one and the same willow. The bush grew in Glen Lyon, in the valley, not a great way from Fortingal! We have seen very good *S. aurita* × *nigricans* in the same neighbourhood, but how did the *Myrsinites* element get there? The plant, of which we only have foliage (and our cuttings have died), is at first sight just like valley *aurita* × *nigricans*; young leaves clothed with thick pubescence, but glabrescent to

some extent, or becoming nearly glabrous; stipules *aurita*-like, also glabrescent. The young twigs, too, are densely clothed with pubescence. But the lower leaves in the shoots, which have lost much or most of their pubescence, are *green* and strongly reticulate, with the reticulation that *Myrsinites* gives in composition; and the primordial leaves in the shoots are shining green, with a raised reticulation that *S. Myrsinites* will account for, and nothing else can. These lower leaves are roundly obovate, crenate-serrate; the remaining leaves are ovate, acute, and more decidedly serrate, with the larger teeth curved inwards, and a waved margin. To account for the existence of this plant in the valley, it is just possible that a wind-driven insect might convey *Myrsinites* pollen from the neighbouring mountains to a female bush of *S. aurita* × *nigricans* in the valley, and so fertilize the valley bush. This, however, is most improbable, perhaps scarcely possible. It is more likely that the cross took place in the mountains, and that the seed containing the three elements in it (*S. Myrsinites* × *S. aurita-nigricans* by preference) was carried in a storm to the valley locality where it germinated.

*S. aurita* × *repens* (*S. ambigua* Ehrh.). — Two distinct forms of this have been collected by us in the Clova Valley, one to three miles below the Hotel. One exactly intermediate and corresponding with *genuina*, as figured in Syme E. B., we found in 1889. The other is much on the side of *S. repens*, and is probably *S. ambigua* × *repens;* found in 1887. Another plant with small leaves of the *genuina* shape was gathered near Braemar in 1883, at about 1400 ft.

*S. aurita* × *Myrsinites* (*S. saxetana* F. B. White). — Discovered by us in Glen Fiagh, Forfar, in 1889, but then unknown to us. On some leaf specimens sent by one of us to Dr. White, he replied, but with some hesitation, that it was probably *S. aurita* × *Myrsinites*. In 1880 we gathered the plant again in the same place, with one catkin (female), but the foliage was not so good as before. This year, 1892, the cutting of the 1889 gathering has fruited freely, and we can give a description from this ample material, and at the same time confirm Dr. White's suggested naming. He refers to our specimens in his *Revision*, p. 436. In the wild plant the leaves are all rather small, $\frac{3}{4}$–$1\frac{1}{4}$ in. in length, those at the base of the shoots orbicular or roundly ovate, with thin silky pubescence and green on both sides, shortly petioled; those above ovate to obovate, with an acute and usually oblique tip, pubescent chiefly on the nerves, margin finely serrate and more or less recurved; nerves prominent and reticulate beneath, obscure on the upper surface. Young twigs pubescent; year-old wood like that of *aurita*, but rather darker brown. In the cultivated plant the basal leaves become shortly obovate, obtuse, green beneath; the upper, when mature, are 2–$2\frac{1}{2}$ in. long, slightly pubescent and reddish at first, glabrescent, very glaucous beneath, the midrib remaining pubescent, the short acute tip sometimes oblique, as frequently straight; petiole lengthened in proportion; young twigs reddish in colour, gradually turning to blackish purple. The catkins are about $\frac{3}{4}$–1 in. long, on pubescent leafy peduncles $\frac{1}{4}$–$\frac{1}{2}$ in., and expand before the

leaves. The twigs bearing them have lost their down, and exhibit a *Myrsinites* polish. The ovaries are tomentose, closely packed, narrow ovoid-conic, rather short, with a good style, and divided stigmas; pedicel three times as long as the nectary; the broad obovate-spathulate scale clasping the ovary, shaded through pink to a dark brown rim. The young leaves, when the ovaries are half-matured, shine on both sides, and are reticulate beneath.

*S. Caprea* × *nigricans* (*S. latifolia* Forbes).—From Clova Valley, one bush only for certain, the cutting from which (in cultivation at Shirley) has turned out male.

*S. nigricans* × *phylicifolia* (Wimmer). — We take this name in Wimmer's sense as representing the series of hybrids between the two species, *S. nigricans* and *S. phylicifolia*. The Clova district is rich in both, and also in intermediates, which we believe for the most part to be of hybrid origin. The series of intermediates naturally presents a wide amount of variation, as both species vary considerably, and also because indefinite crossing has taken place in the lapse of time, not only between the two species, but between the intermediates and the original species, and between the intermediates themselves. In the Clova Valley we have gathered forms of the hybrid, (1) a mile below the Hotel, leaf specimens in 1889; (2) from the same locality, a male with broader leaves, in 1889; and (3) from Bradoonie, a broad-leaved female form, in the same year. From Glen Fiagh we have gatherings from no less than five different bushes, all female, and all obtained in 1890, chiefly from the head of the glen. We consider now, after cultivation, that the plant from Glen Doll, sent up to the Bot. Exch. Club in 1890 by W. R. Linton, collected on July 14th, and labelled *S. nigricans* × *phylicifolia*, was rightly so named. Two of the valley plants above referred to were sent to Dr. White in 1889 by one of us, and stated by him to come best under this hybrid.

*S. nigricans* Sm., var. *rupestris* Sm., Glen Fiagh, has come in our way, but we did not happen to take cuttings, and have not tested the plant in cultivation.

*S. Lapponum* × *phylicifolia*. — A small plant in Glen Doll attracted the attention of one of us in July, 1890, as having the wood and leaf-shape of *S. phylicifolia*, but the young leaves and twigs covered with dense white down, and the margin of all the leaves being entire. There was a suspicion of *Lapponum* from the first, but we have so often supposed broad-leaved forms of *S. Lapponum* with a greener than usual upper surface to be the hybrid between these two, *e. g.*, a plant from the Unich Water, Forfar, found in 1889, and another from Glen Callater, in 1884, by ourselves, and a third gathered by Messrs. Hanbury and Marshall on Meall Buidhe, Argyll, in 1889, and had afterwards to give them up, that we were not confident about this plant. In cultivation at Bournemouth it has flowered in the spring of this year, and proves to be male. The contrast between this and various forms of *S. Lapponum* grown in the same garden show at once that it is no form of that species. It has rather the appearance, in its summer foliage, of a form of *S. nigricans* with its broad elliptic downy leaves.

But the buds, and especially the catkin buds, and to some extent the catkin scales, prove for certain that *S. Lapponum* is one parent. The following description is drawn up from the plant as cultivated in sandy and peaty soil at Bournemouth:—Twigs and buds pubescent during the summer, becoming glabrous after, *dark brown;* leaves oblong elliptic or broadly obovate, rapidly contracted to a short acute oblique point, downy and *rugose* with deeply impressed nerves above, *woolly* beneath and principal nerves prominent, margin somewhat recurved, almost *entire*, with here and there a raised point showing a suppressed serration; catkin short, enclosed during winter in a large *dark brown* polished scale (like the flowering bud of *S. Lapponum*); catkin-scales ovate, acute, much darkened upwards, and clothed with long silky hairs; anthers yellow, tipped with red. Mr. Arthur Bennett tells us that *S. Lapponum* × *phylicifolia* is known in Scandinavia, and very rare. It does not appear to have been published for Britain hitherto.

*S. Lapponum* × *Myrsinites* (*S. phæophylla* Ands.). — To this we place gatherings of a female plant from Glen Fiagh. The catkins are about ¾ in., with 2–3 leaves at the base of the silky peduncle; catkin-scales obovate, blunt, darkened upwards, with silky hairs; ovary rather large, silky, pedicelled; style long; stigmas large, divided; nectary long, exceeding the pedicel. Leaves ovate or obovate, sometimes rounded at the base (not cordate), more frequently narrowed to the petiole, clothed with silky hairs while young, but becoming much less hairy or subglabrous, and shining beneath in a subdued way, and markedly reticulate with raised veins; margin of leaf entire, or nearly so. Catkins about ¾ in. long, on ½ in. peduncles; ovaries tomentose, ovoid-conic; lower ones, if not all, shortly pedicelled; nectary long, much exceeding the pedicel, dilated upwards, yellow; style very long; stigmas large; catkin-scales light brown, but darkened upwards, obovate, rounded at the top, more or less involvent. Twigs silkily pubescent their first year, afterwards becoming polished and reddish brown. It is difficult to distinguish this from one form of *S. herbacea* × *Lapponum*, which approaches and simulates it; but the sharper reticulation under leaf and the absence of serration, and the leaf never being cordate, as is usually the case sooner or later with the latter hybrid, are satisfactory differences. The pedicelled ovary is not a certain distinguishing feature, as the ovaries are not always sessile in *S. herbacea* × *Lapponum*. This is, we believe, a first notice of the hybrid for Britain.

*S. Myrsinites* × *nigricans* Wimm. (*S. punctata* Whlnb.). — We mention first a male plant found at the head of Glen Fiagh in 1890, with leaves clothed with silky hair, ovate-oblong to obovate, subacute, blackening somewhat in drying; catkin about ½ in long. From this glen we have also procured a female plant with leaves near *Myrsinites*, hardly blackening at all in drying, and with fruiting catkins much like those of *nigricans;* another with large intermediate leaves, and fruiting catkins like those of *S. Myrsinites*, only very large for that species; another rather coarse-growing plant that might easily be passed over as *S. nigricans*, but in which leaves

and fruiting catkins give certain evidence, if obscure, of *S. Myrsinites*. These are all from Glen Fiagh. From Glen Doll we have good fruiting specimens of a fine intermediate plant with silky ovate-lanceolate leaves, that blacken a good deal in drying; also a specimen which is fairly intermediate and in good fruit, gathered in 1888 by the Rev. E. S. Marshall. Another Glen Doll plant may be mentioned here, which is probably a blend of this hybrid with *S. phylicifolia;* the latter being rather the most prominent species, but *S. nigricans* coming out in the blackening of the leaves in drying, and in the dense pubescence of the young twigs, while the narrow oblong leaves at the base of the shoots shining beneath, and their reticulation, as well as something in the appearance of the catkins, give evidence of *S. Myrsinites*. We may say here that a plant which the Rev. R. P. Murray has growing at Shapwick, having received it from Kew, under label *S. nigricans* var. *damascena*, while it appears to differ little from *S. nigricans* in the fruiting catkin, shows unmistakeable signs of *S. Myrsinites* being present in the reticulation, &c., of its leaves.

*S. Myrsinites* × *reticulata*, nov. hyb. — A plant found in Glen Fiagh, growing near *S. herbacea* × *Lapponum*, in 1889, was put away with other specimens of that hybrid as a variant form, the material being insufficient to found any other opinion on. In 1891 the cutting of this plant, grown at Bournemouth, developed signs of *S. reticulata* in the leaves, and still believing from the creeping habit that *S. herbacea* was present, we supposed the plant to be a combination of these two species. The fruit characters, however, in due time quite upset this view; not to mention the divergence from the plants mentioned below in the leaf. By replacing *S. herbacea* with *S. Myrsinites* all difficulty is cleared up; and we append a description by the one of us (E. F. L.) who has solved the question, and is responsible for the naming. In view of the DeCandollean Regulation (Art. 37), which recommends that a hybrid be not published as such without the hybridity being fairly demonstrated, a name is given to this plant.

**S. eugenes** Linton, n. sp. vel hyb. — Stem prostrate, usually ascending in its terminal shoots, clothed with deciduous pubescence; leaves oblong or ovate-oblong, the upper ones cordate at the base and acute, serrate or crenate-serrate, sometimes obscurely so, glabrous above and with veins deeply impressed, the lower surface with long silky hairs mostly soon deciduous, and with the chief veins much raised and smaller reticulate, green beneath (not shining), but with a glaucous tinge appearing in the later leaves; catkins about ½ in. long, on downy peduncles ½ in. or more in length; catkin-scales very large, enclosing two-thirds of the very silky ovary and even overlapping part of the styles in some cases, the lower scales concolorous (pale brown), the upper shaded to darker brown above, with some but not much long silky hair, obovate and roundly blunt, clasping the ovary, which is subsessile to sessile; styles very long, red; stigmas large, divided; nectary rather long, slender, exceeding even the lowest pedicels. The nectaries are *double*, where they can be discerned, in the original

specimens; a feature which is no doubt due to the influence of *S. reticulata*, whose nectaries Wimmer describes as "plerumque bina," and Andersson as "urceoli laciniati instar." The peduncle bears two or three leaves, a bud occupying the highest axil and developing a summer shoot (in garden). *S. reticulata* has this bud at the base of the peduncle, but usually it does not develop into a shoot till the following year (see *E. B.*, 3rd ed.).

*S. herbacea* × *Myrsinites* (*S. Myrsinites-herbacea* Ands.: *S. Sommerfeltii* Ands.).—A male plant from Little Craigindal, S. Aberdeen, found in 1889; in cultivation at Shirley. Our plant is not so broad-leaved as Andersson describes his two forms, the leaf being obovate, with a very short acute point, and not cordate, but in other respects the foliage does not vary much from his description. Leaves finely serrate, with reticulation on both sides markedly raised, softly hairy at first on both sides, but quickly glabrescent; paler green beneath than above; young twigs clothed with dark curled pubescence. Andersson only describes the fruit (female) catkin; we cannot therefore compare ours with his. While the leaves of our plant borrow wholesale from *S. Myrsinites*, the catkins take as much from *S. herbacea*. These are $\frac{1}{3}$–$\frac{1}{2}$ in. long, on slender silky peduncles with two or three small silky-fringed leaves; scales yellowish below, tipped with purple, obovate, subglabrous; anthers yellow, purplish upward. This colouring, and the size of the catkins, and the shape and reticulation of the young leaves, are the chief signs of *S. Myrsinites* in the flowering condition. We believe that the hybrid is new to Britain, though known for Lapland and Norway.

*S. herbacea* × *reticulata* (*S. onychiophylla* Ands.).—Our gathering of this beautiful little plant in 1889 appears to be the first finding of it for Britain. Nyman gives it for Norway and Lapland. We have already published a note in this volume (p. 149) on a Perthshire plant discovered by one of us on Meall-na-Saone in 1891, which we believe to be this hybrid. We now give some account of the first found plant which comes from Glen Fiagh, Forfar. Stems prostrate, pubescent at first, glabrescent; leaves orbicular, mostly truncate at the base, the uppermost subcordate, obscurely crenate, some crenations having a glandular point at their upper extremity, dark green and slightly rugose, but becoming nearly flat, and showing the raised veining of *S. herbacea* on the upper surface, rather glaucous or glaucous green beneath, and strongly reticulate; margin recurved, markedly so towards the base, very thinly hairy or rather subglabrous on both surfaces; petiole between one-half and one-third the length of the blade; buds in the late summer large for the plant, oblong or narrow-ovate, pale yellow-green, glabrous or with a few deciduous hairs at first; scale of the bud persistent after the bud has become a shoot (amplexicaul in the case of a summer shoot). This last point and the character of the buds are convincing proofs of the presence of *S. reticulata* in this willow; the leaves also show it, but testify in their shape, texture and veining to the influential presence of *S. herbacea*. The Perthshire plant above referred to has its leaves finely crenate-serrate, *S. herbacea*

being still more prominently present in them. The cuttings taken from Glen Fiagh in 1889 have flowered in the garden at Shirley this last spring, and the plant proves to be male. The catkin differs little from that of *S. herbacea*, excepting in point of size, being $\frac{1}{3}$ in. long; the two leaves on the peduncles and the leaves of the young shoots at the time of flowering look like *reticulata* leaves on *herbacea* petioles.

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# FURTHER NOTES ON HIERACIA NEW TO BRITAIN.

By Frederick J. Hanbury, F.L.S.

(Continued from p. 261.)

**Hieracium britannicum,** n. sp.—A well-defined and characteristic plant of the extensive limestone districts of Central Britain. I owe my first acquaintance with it to the Rev. W. H. Purchas, who, for two or three years before I was able to gather it for myself, sent me a liberal supply of dried specimens, also roots for growing, accompanied by several critical notes of interest. It is to be found under various names in some of the older herbaria, and must be well known by sight to many British botanists.

Belonging to the same wide group as the last, it may be readily recognized by the extraordinarily conspicuous parallel veining (best seen on the under side), and deep acute toothing, of the radical leaves; the teeth, pinnæ, or appendages, often extending a long way down the petiole. Ranging in height from about 12 to 18 in., the stem is commonly leafless, or bears one large leaf near the base, and a mere bract at the point of branching, striate, with few short scattered hairs; peduncles rather long, slightly arcuate, very floccose, with numerous setæ and simple hairs interspersed. Heads usually from 3 to 6, rather large. Involucre truncate at the base, ultimately conical, grey with stellate down and long white hairs, a few setæ being interspersed. Phyllaries long, narrow, and acute, porrect in bud. Ligules glabrous at the tips. Styles almost yellow, rather dusky on the under surface, rarely pure yellow. Outer radical leaves broadly ovate, apiculate, sub-entire near the apex, but becoming very coarsely toothed towards the remarkably truncate base. Inner leaves narrower, more acute, less truncate and more deeply toothed. All of a firm texture, glaucous and glabrous above, much furrowed by the deep veining, and clothed on the under surface and margins with loose white hairs.

It grows in profusion in many of the limestone dales and scars of Derbyshire, Staffordshire, and Yorkshire. Besides gathering it myself in these three counties, I have received it from The Pinch and Dovedale, Derbyshire, and Sugarloaf Rock, Wetton, North Staffordshire, through the Rev. W. H. Purchas; from Chee Dale and Attermire Crags, Settle, through the Rev. W. H. Painter; from rocks between Buxton and Millers Dale, through Mr. J. C. Melvill. Two sheets in the Boswell Herbarium, collected in 1863 and 1873 from Burnt Island, Fife, by the late Dr. Boswell and Mr. Fortescue,

appear to me to belong to this species. The specimens are old, discoloured, and badly dried, and the locality should be searched anew. Under cultivation the styles of the Dovedale plants become pure yellow, and thus exactly approximate to the form occurring in the Settle district.

H. BRITANNICUM var. VAGENSE, n. var.—As a variety of this species a very remarkable plant discovered by the Rev. Augustin Ley, on rocks by the Wye in Errwood, may be suitably described. It extends for a considerable distance on both sides of the river in Brecon and Radnor, whence Mr. Ley first sent me specimens, gathered on the 16th of June, 1887. The following year I received through the Botanical Exchange Club, a specimen, differing but little from the Wye plant, from Craig Breidden, also collected by Mr. Ley, on the 13th of June, 1887. This had evidently been sent to Mr. Backhouse mixed with some *H. lasiophyllum* Koch, for he made a pencil note,—"Probably the same as the other; yet it looks more like *pallidum crinigerum* than they do." The plant appears to me to agree well with a type specimen in the Kew herbarium of *H. pallidum* Biv. var. *Pseudo-cæsium* Schur. Its affinities, however, are much more with *H. britannicum* than with *H. pallidum*. A single sheet was sent to Dr. Lindeberg, who dismissed it as a "forma monstrosa Hieracii murorum." As it is a form occurring in two counties over a considerable length of the Wye, and is also found on Craig Breidden, Montgomery, and which when cultivated and grown from seed maintains all its distinctive characters, it can hardly be disposed of thus. Professor Babington wrote concerning specimens submitted to him: "I have what seems to be the same as this from Cairntoul, gathered and named *nitidum* by Backhouse, except that the styles are differently coloured. Backhouse I see does not venture on a name for yours. The curiously overtopping phyllaries in the heads of the Wye plant deserve attention." It is impossible, for many reasons, to place this plant under *H. nitidum*, as would be apparent to anyone seeing it when fresh, whilst the extreme glaucousness and prominent venation of the leaves, shape and clothing of the involucre, as well as its fair agreement in general characters, closely unite it to *H. britannicum*, from which, however, it may be readily distinguished by its narrower, more deeply and acutely toothed leaves, *pure* yellow styles, and slenderer habit.

H. SOMMERFELTII Lindeb. var. TACTUM, n. var.—Another striking form from the mountains around Kingshouse, Argyleshire. Closely resembling *H. Sommerfeltii* in foliage and general habit; the involucre is so conspicuously different as to raise a doubt whether it may be possible in the long run to treat it has a mere variety of this species. From the limited locality from which it is yet known, and from the paucity of material in my possession, I prefer to do so for the present. The plant is of too marked a character to be passed over, and it is well that attention be at once directed to it, in order that others may endeavour to extend the knowledge of its range, and gain additional information respecting its habits. Mr. Marshall and I first found it on Clack Leathead, and in Fionn Glen,

Kingshouse, in July, 1889. Of a sheet sent to Dr. Lindeberg, he wrote, "Herba=H. Sommerfeltii at phyllaria longe alia." The leaves are more deeply blotched with reddish-purple than in the type, whilst the teeth are remarkably long, acute, hooked, and forward pointing. There is also a stem-leaf in the specimens in my possession. The involucre, however, is the marked feature; the phyllaries being fewer in number, much broader and bluntter, more densely clothed and floccose at the margin than in the type, the outer very short. They are arranged in several ranks. Three years' cultivation has produced no change in general habit. Though the name does not differentiate it from the type, it serves to accentuate a marked character, and would be suitable as a specific name should further investigation prove this change to be necessary.

**H. caniceps,** n. sp.—The head-quarters of this plant are among the rocky burns of Sutherlandshire and Perthshire, often at no great elevation above the sea. Specimens were gathered in the Strath Bagaisteach, Altnaharra, by Mr. J. C. Melvill and myself in July, 1888, and the same month Dr. F. Buchanan White collected it from the Allt Dubh Ghalair and Loch Voil, in Perthshire. The following year Mr. Marshall and I gathered it on Ben Laoigh, Perthshire; and in 1890 on rocks by the Oykell, at Oykell Bridge, and by the Calda and Traligill Burns, near Inchnadamph, all in Sutherlandshire. Less characteristic specimens (though referable, I think, to this species) occurred on an amphitheatre of clay cliffs by the Almond, in Perthshire, where it was found by Dr. White and myself.

Belonging to the *Scapigera*, and of an average height of about 20 in., its most striking features are the grey conical heads (4 to 10) borne on long, slender, arcuate and almost equally grey peduncles, which, like the long acute phyllaries, are densely floccose, with numerous setæ, and few white black-based hairs interspersed. Flowers rather large; ligules somewhat ciliate at the tips; styles yellow or dingy yellow. Outer radical leaves oval apiculate, inner ovate-lanceolate ocute, all more or less toothed, especially towards the base, which is abruptly narrowed into a long shaggy petiole; though rather thin they are of a harsh texture, bright green, and clothed on both surfaces with rough white hairs, sometimes nearly glabrous above. There is commonly one stiff, narrow, very acute stem-leaf borne on a long petiole (especially when it occurs low down), and a narrow bract where the stem branches. I have had this species under cultivation for three years, and find the characteristic grey heads and peduncles, and also the leaf characters, to be very constant.

H. CÆSIUM Fr. var. INSULARE, n. var.—A form hitherto only observed from the neighbourhood of Crianlarich, in Perthshire, where it was found by Mr. Marshall and myself in July, 1889, at from 2100 ft. in Corrie Ardran, to 3200 ft. on Am Binnein, and is doubtless to be found in other high mountain glens of that neighbourhood. The plant is of an exceedingly prim, stiff habit, from 6 in. to a foot high. About two-thirds of my specimens are monocephalous, and none bear more than two heads. The flowers

are remarkably neat (marigold-like), and of a deep golden yellow. Ligules practically glabrous. Styles rather livid. Buds long and cylindric. Phyllaries adpressed, inner sub-acute, all very floccose at the tips and margins, and clothed with short black-based hairs and setæ. Peduncles densely floccose and setose. Radical leaves few, the outer oval or ovate, blunt, apiculate, almost entire, the inner ovate-lanceolate, very acute, and with a curious lateral curve extending from the apex to the base of the rather long shaggy petiole, and more decidedly toothed, especially towards the base. There is one lanceolate, acute, toothed and shortly stalked stem-leaf, of much the same form as the inner radical leaf. All deep green, coriaceous, with rather prominent veins, clothed on both sides with rough white hairs, though in some specimens the upper surface is nearly or quite glabrous. Dr. Lindeberg, while considering the form should be placed under *H. cæsium*, spoke of it as "ignotum, pulchrum, distinctum!" There being much doubt as to what amount of variation Fries intended to allow under the use of the name *cæsium*, and since it has become convenient to designate as by *H. murorum* Linn., a very variable section rather than a well-defined species, I gladly follow Dr. Lindeberg's suggestion, and describe yet another distinct-looking form. When, however, Mr. Baker's two varieties, *cambricum* and *Smithii*, the plant we commonly regard as type *cæsium*, Dr. Lindeberg's var. *alpestre*, and a form like the present are placed side by side, any exact definition of such a species becomes impossible.

H. Friesii Htn. var. Stewartii, n. var.—A constant and strongly marked local variety collected for many years by Mr. S. A. Stewart from the Shimna River, Tollymore Park, and in even greater abundance and luxuriance from the Ban River, among the Mourne Mountains, Co. Down. It differs from other forms in the large size to which it attains, often three feet in height, in the great breadth of the leaves, in this respect outstripping Mr. Backhouse's var. *latifolium*, and in their extraordinarily cuspidate character, the sharp, narrow, curved and forward pointing teeth often attaining about $\frac{3}{4}$ of an inch in length. The heads are remarkably large and handsome, being of a deeper golden yellow than in the ordinary forms. I had the pleasure of collecting a very fine series in Mr. Stewart's company last year whilst staying at Hilltown, where the masses of the plant on both sides of the Ban form a striking feature in the vegetation.

H. Friesii Htn. var. hirsutum, n. var. — Under the above varietal name is here briefly described a form I found in August, 1887, in the stony bed of the Clunie at Braemar. The Rev. E. F. Linton informs me that he has since gathered similar specimens in the same locality. I have raised and cultivated for four years a clump of seedlings even more distinct looking than the parent plant. Last year Dr. F. Buchanan White sent me very similar, if not identical, forms from Strath Braan and Linn of Campsie, Perthshire. All these specimens differ markedly from type *Friesii* in being clothed all over with long white hairs, especially when young, and in having a sparingly floccose and (rather densely in

the Clunie plants) setose involucre. All the seedlings I have raised produce abortive flowers, stylose if they open at all, but usually withering in the bud stage. The specimens sent me by Dr. White are also stylose. At Braemar it grows associated with ordinary *Friesii*, *crocatum*, *Eupatorium*, *prenanthoides*, &c., and was found amongst much the same company in the Perthshire stations. Dr. Lindeberg wrote in 1887, "Ab Hieracii Friesii periclinio pilis glandulisque dense vestito, ut propria species facile separandum." I strongly suspect the plant is a hybrid, but have insufficient evidence to warrant my designating it as such, and I therefore treat it as a marked variety, to which distinction it is certainly entitled.

Whatever doubt may attach to the question of the hybridity of the last, I entertain little or none respecting the hybrid origin of the following. Actual proof would be a matter of the greatest difficulty, if not impossibility, for we cannot artificially cross-fertilise a *Hieracium* with the comparative ease with which a *Salix* or *Epilobium* may be so treated, and as recent numbers of this Journal show that there are those who refuse to believe in the existence of hybrids even amongst plants of these genera, I give up as hopeless the task of endeavouring to convince such that they exist amongst Hieracia. One can only be guided by the evidence of one's senses, the surroundings of the specimen, its intermediate characters, the extent of its range, sterility, abortion, &c. A lengthy communication from Dr. Lindeberg on this interesting subject may be thus briefly summarised—hybrids among Hieracia unquestionably exist, but they are rare. I hope I may be able to deal with this question at greater length when the introduction to my *Monograph* comes to be written.

(To be continued.)

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# ALIEN PLANTS NEAR WOOLWICH.

By Capt. A. H. Wolley Dod.

Woolwich Arsenal is a specially favourable locality for the appearance of alien plants, as, being enclosed ground, it is free from the depredations of collectors, so that plants once established have a very fair chance of remaining; and although the constant erection of new buildings in some of the best localities covers up some, others frequently appear on the soil which is turned for foundations. I have included in the following list plants gathered at the Southern Sewer outfall at Crossness, where a large piece of ground is enclosed as a receptacle for Thames mud; one or two gathered at the entrance to the Docks on the other side of the river (this is nominally in Kent, though geographically Essex); and a few from the old disused brickfields in Plum Lane, Plumstead, and in Wickham Lane. No doubt the list might be considerably extended, as new plants are constantly turning up. I have not thought it desirable, however, to include such common rubbish-heap plants as *Linum usitatissimum*, *Erigeron canadense* (very abundant in the

Arsenal), *Phalaris canariensis*, and ten or a dozen others, nor obvious garden or cultivation escapes like *Borago officinalis*, *Calendula officinalis*, &c. The nomenclature followed is that of the *London Catalogue*:—

*Alyssum incanum* L. Crossness, and Plum Lane brickfields.

*Sisymbrium pannonicum* Jacq. A few plants in Wickham Lane brickfields, and in great abundance in Woolwich Arsenal. I first observed it four or five years ago, only seeing a plant or two; but it has very rapidly increased, and many hundred plants are now to be found. There is a peculiarity in the whole of the plants I have seen, which retains its characters in plants grown from seed in garden soil, namely, that the petals, which are represented in Jacquin's figure in *Ic. Plant. Rar.* as being quite half an inch long, are in the Woolwich plant shorter than and much narrower than the calyx, and much the same colour, so that at first sight the flowers appear apetalous. Late in the season, the petals, even in just opening flowers, seem to disappear altogether, but Mr. Scott Elliot, to whom I sent some specimens, says that he could detect the claw only of the petals, green, and adherent to the sepals. The form is quite constant, and seems worthy of study.

*Erysimum orientale* R. Br. Eight or ten plants on some newly turned soil in Woolwich Arsenal. These are specially interesting on account of their associates, viz., *Silene maritima* in some quantity, and one plant of *Cakile maritima*. The soil is dredged river gravel, and had been taken from another spot in making foundations for some new buildings, where it had lain two or three feet below the surface since about the year 1800, when the present river-wall was built. I know of no record, nor even a suitable locality for *Cakile maritima* nearer than Canvey Island, fifteen miles down the river; and *Silene maritima* has not, I believe, occurred above Southend. Though it is possible that the seeds were carried up by the tide, I think it is more probable that the soil was dredged from somewhere near the localities indicated. In either case the seeds must have lain dormant for over ninety years.

*Camelina sativa* Crantz. Occasional in Woolwich Arsenal and elsewhere.

*Lepidium virginicum* L. Two plants five years ago in the Arsenal, now built on.

*Bunias orientalis* L. Crossness, several plants; and here and there in Woolwich Arsenal.

*Saponaria Vaccaria* L. Ash-heap in Plum Lane brickfields, in some quantity.

*Malva borealis* Wallm. Crossness, on the dredged mud.

*Melilotus officinalis* Desv. Arsenal, Crossness, Docks, and Plum Lane and Wickham Lane brickfields. Apparently much commoner than *M. altissima* Thuill.

*Potentilla norvegica* L. Seven or eight plants on some ashes recently spread on some waste ground in the Arsenal to a depth of ten or twelve inches. The ashes, I believe, were the product of Arsenal furnaces, so the seeds must have been self-sown.

*Coriandrum sativum* L. Two plants on canal bank in the Arsenal five years ago, and not since seen.

*Asperula arvensis* L. A few plants in Plum Lane brickfields.

*Xanthium spinosum* L. Two or three plants for two or three years successively at Crossness. They seemed never to flower, and have now, I think, disappeared.

*Ambrosia artemisiæfolia* L. By canal-lock in Arsenal, a single plant.

*Galinsoga parviflora* Cav. Entrance to Docks, a single plant.

*Datura Stramonium* L. Sporadically here and there, chiefly in the Arsenal.

*Marrubium vulgare* L. Quite established on an old rubbish-heap in Plumstead Marshes, and once seen in Plum Lane brickfields.

*Chenopodium opulifolium* Crantz. Entrance to Docks, Plum Lane and Wickham Lane brickfields, Plumstead Marshes, and in some quantity at Crossness.

*Atriplex hortensis* L. Occasionally in Plumstead Marshes.

*Fibichia umbellata* Koch. A large patch between entrance to Docks and Beckton Gas Works, now covered up.

*Bromus Schraderi* Steudel. Several plants at Crossness.

*Hordeum jubatum* L. Rare and sporadic at Crossness.

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## A NEW BRAMBLE.

By James E. Bagnall, A.L.S.

**Rubus Mercicus,** sp. n. — Stem erect-arcuate, branching, roundish below, angular or sulcate above, purple, shining, clothed with short scattered clustered or stellate hairs, *and here and there a few stalked glands and acicles;* prickles *numerous, unequal, not confined to the angles,* declining or deflexed from a long compressed base, purplish with yellow points; leaves flat or convex, 3- to 5-nate pedate; leaflets dark green with few hairs above, paler beneath with silky hairs on the veins, *not felted,* terminal leaflet broadly ovate or roundish, entire or slightly cordate at the base, cuspidate-acute or shortly acuminate; petiole $\frac{1}{3}$ the length of leaflet; intermediate long-stalked, obovate cuspidate-acuminate; basal shortly stalked, ovate or obovate-acute, coarsely and somewhat doubly dentate-serrate; petioles and midribs with many hooked prickles, spreading hairs, and occasional acicles and stalked glands; stipules lanceolate, thinly hairy.

Flower-shoot from fuscous scales, angular or slightly furrowed above, *clothed with silky spreading hairs, not felted;* prickles short, declining or deflexed; leaves ternate; terminal leaflet obovate, slightly cuspidate, unequal-sided, dentate or slightly lobate-dentate, pilose above, hairy on the veins beneath; panicle lax, usually short, and narrowing but little to the rounded top; ultra axillary part with nearly patent few-flowered branches having the pedicles of their lateral flowers longer than that of the terminal; lower branches ascending, usually shorter than the subtending leaf;

rachis and pedicles with numerous patent and declining aciculate prickles, acicles, and a few stalked glands, rather thickly clothed with shining spreading hairs, more or less felted above, dark purple below; sepals ovate, *with long attenuate points*, felted, with a narrow white margin, reflexed in fruit; petals white, changing to light pink, obovate, shortly clawed; filaments white, *afterwards reddening*, longer than the pale green styles; fruit black, usually well formed, insipid; primordial fruit-stalk scarcely longer than sepals. Flowers July—August.

*R. ramosus* Blox., *Journ. Bot.* 1871, pp. 330, 332; *Flora of Warwickshire*, 1891, pp. 73, 74.

The typical plant is abundant near Minworth, but closely allied varieties are abundant at Hartshill, Ryton, Wolvey, Shilton, and about Corley and Radford, the plants about Ryton, Wolvey and Shilton approaching *R. ramosus* Blox. in their more prolonged panicles, but more closely allied to *R. Mercicus* than to any of the varieties of *R. ramosus*.

This plant was formerly referred to *R. ramosus* Blox. by Prof. Babington and confirmed by the Rev. A. Bloxam, and under that name it has been distributed to the members of the Botanical Exchange Club. Many years ago, however, an interchange of specimens between the late Mr. T. R. Archer Briggs and myself, and a rather lengthened correspondence on the subject, led us to the conviction that the Devon and Warwickshire plants thus named could not be regarded as identical, but it seemed to us that a definite separation of them into two named species might, in the ignorance of Continental forms of which we were at that time conscious, prove premature. Quite recently the Rev. W. Moyle Rogers has suggested to me that the Warwickshire plant should now be separated from the Devon *R. ramosus*, and distinguished by a different name, either specific or varietal; and as I think with him that there are structural differences of a very marked kind, I prefer making the distinction one of species. My first thought was to name the plant after the county in which I find it, but as, besides being spread widely in Warwickshire, it is also found by the Rev. W. H. Purchas in Staffordshire, and I believe by the Rev. W. R. Linton in Derbyshire, I have, on the suggestion of the Rev. E. F. Linton, given preference to the more comprehensive and pronounceable *Mercicus*.

My thanks are specially due to the Rev. W. Moyle Rogers for his kind help in drawing up the description and for many valuable suggestions.

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## *REPORT OF DEPARTMENT OF BOTANY, BRITISH MUSEUM*, 1891.

By William Carruthers, F.R.S.

During the year 41,875 specimens have been named, mounted, and inserted in their places in the Herbarium. These have consisted principally of plants from Arabia, collected by Schweinfurth;

from India, by Schlagintweit, Duthie, Clarke, and Beddome; from Gwalior, by Maries; from Penang, by Curtis; from Burmah, by Ridley; from Malaya, by King; from Western China, by Henry and Pratt; from South Africa, by MacOwan; from Madagascar, by Scott Elliot; from Australia, by Fitzgerald; from Canada, by Macoun; from Mexico, by Pringle; from the West Indies, by Ramage; from Grenada, by Sherring; from New Granada, by Triana; and from Chili, by Borchers; and of plants of various Natural Orders from the Herbaria of Auerswald, Shuttleworth, Miers, and Hance.

In the progress of incorporating these additions in the Herbarium the following Natural Orders have been more or less completely revised:—*Malvaceæ*, *Leguminosæ*, *Myrtaceæ*, *Passifloreæ*, *Compositæ*, *Ericaceæ*, *Myrsineæ*, *Sapotaceæ*, *Convolvulaceæ*, *Solanaceæ*, *Scrophulariaceæ*, *Labiatæ*, *Orchideæ*, *Liliaceæ*, *Cyperaceæ*, *Gramineæ*, and *Filices*; together with large groups of *Hepaticæ*, *Lichenes*, *Algæ*, and *Fungi*.

Considerable additions and improvements have been made during the year in the exhibition of the specimens and illustrations of the Natural Orders in the Public Gallery.

The collections of the fruits and seeds of palms, and of the fruits and seeds of British plants, have been named and arranged.

The large collection of original drawings made by the late Dr. Schleiden, illustrating the morphology and anatomy of different Natural Orders, have been arranged and mounted, with the view of binding them in volumes for easy reference and preservation.

The extensive series of slides prepared by, and representing the work of, the late Professor De Bary, lately purchased by the Trustees, has been arranged in systematic order. The medium originally employed in mounting the preparations having been insufficiently secured, every slide has been carefully examined and re-sealed, and, wherever necessary, the specimen has been re-mounted. One-third of the whole collection has been thus treated.

The typical collection of British *Diatomaceæ* belonging to William Smith, and illustrating his standard work on these plants, contained a considerable quantity of unmounted material, which was specified in the published Catalogue. This has all been prepared and mounted on slides, so as to permit of the exact study of the specimens without injury.

The principal additions to the Herbarium during the year have been (1) the study set of the plants of New Granada formed by the late M. J. J. Triana, consisting of the whole of the plants, so far as collected by himself, which have been described in his works, and in his unfinished "Prodromus Floræ Novæ Granatensis"; the collection consists of over 8000 specimens belonging to 4490 species of a flora very imperfectly represented in the Herbarium; (2) the collections made by Aug. Borchers in Atacama, in Northern Chili, consisting of 1100 specimens determined by Professor Philippi; (3) the extensive collection of North American Cryptogams formed by the late Mr. Ravenel, consisting of more than 14,550 specimens, and including all the species which were described from his materials by Berkeley and others.

The additions to the collection by presentation during the year have consisted af 2369 Indian plants from C. B. Clarke, Esq., F.R.S.; 595 Indian plants from Dr. George King, F.R.S.; 775 Malayan plants from H. N. Ridley, Esq.; 200 Malayan plants from C. Curtis, Esq.; 120 Indian plants from J. F. Duthie, Esq.; 420 plants from Gwalior, from C. Maries, Esq.; 22 plants from China, from the Rev. G. J. Maclagan; 160 ferns from St. Vincent's, and a collection of ferns from the Island of Grenada, from the West Indies Exploration Committee of the Royal Society; 100 South African plants from Professor Macoun and H. Bolus, Esq.; 343 Australian plants from Baron Ferdinand von Mueller; 4 plants from the Tonga Islands by R. B. Leefe, Esq.; 241 Canadian plants by Professor Macoun; specimens of American *Malvaceæ* by J. N. Rose and B. L. Robinson, Esqs.; 10 species of Jamaican fruits from W. Fawcett, Esq.; and specimens of cultivated orchids from H. J. Veitch, Esq., and Mrs. Wolstenholme.

A small collection of 60 species of Algæ presented by Professor Flahault is of special interest, as they are types of the "Revision des Nostocacées hétérocystées"; by MM. Bornet and Flahault. Among other presents of cellular plants are 35 species from Ceylon, presented by E. E. Green, Esq.; 23 Algæ from the Cape, by W. Tyson, Esq.; 356 Canadian Hepaticæ collected by Professor Macoun, and presented by him through W. H. Pearson, Esq., who described them; 18 Algæ from the Andaman Islands, by Dr. Prain; 10 species from Colorado, by T. D. A. Cockerell, Esq.; 4 species from New Zealand, by Vaughan Jennings, Esq.; 27 Algæ from the Black Sea, by Miss Karsokoff; 3 slides of Pachytheca from Sir J. D. Hooker; 96 species of Mosses from New South Wales, from the Rev. James Lamont; 5 Algæ and 1 Fungus from Baron F. von Mueller; 254 Mosses from Mrs. Wolstenholme, and specimens from Professor Cramer, M. Bornet, H. N. Ridley, Esq., B. B. Woodward, Esq., Dr. Braithwaite, and W. G. Smith, Esq.; 43 species of Mosses and Hepatics collected by Fendler in Trinidad, by the Director, Royal Gardens, Kew.

Among the additions to the British Herbarium, by presentation, are the following:—306 specimens by the Rev. E. J. Marshall; 162 specimens of flowering plants and 55 Algæ by the Rev. T. S. Lea; 180 specimens from the Herbarium of the late T. R. A. Briggs, through the Director, Royal Gardens, Kew; 146 specimens from J. B. Davy, Esq.; 39 specimens from A. Bennett, Esq.; 32 specimens from W. H. Beeby, Esq.; 26 specimens from J. W. White, Esq.; and various specimens of flowering plants from G. C. Druce, Esq., W. Whitwell, Esq., J. Benbow, Esq., and the Rev. R. P. Murray. Mr. Clement Reid has presented numerous fruits and seeds of British plants. Various specimens of Cryptogams have been received from Sir John Thorold, Bart., J. Saunders, Esq., George Traill, Esq., F. C. S. Roper, Esq., Arthur Bennett, Esq., R. B. Marston, Esq., J. Smith, Esq., and Professor Hartog.

The following collections have been acquired by exchange:—photographs of the original types of rare species of *Adiantum*, not in the Herbarium, from M. Bommer, of Brussels; 31 species of Mosses

from Australia and the Philippine Islands, from V. F. Brotherus 11 species of Hepaticæ from Bolivia, from Mrs. Britton; and 3 Algæ from E. M. Holmes, Esq.

The following collections have been acquired by purchase:—603 species of plants collected in Bolivia by M. Bang; 440 species of Syrian plants collected by Professor Post; 601 plants from the Tibetan frontier, collected by Pratt; 2706 plants from Western China, collected by Dr. Henry; 300 plants from Anatolia, collected by Bornmüller; 497 plants from Spain, collected by Porta and Rigo; 189 plants from Central Paraguay, collected by the Rev. T. Morong; 200 plants from Honduras, collected by the Rev. J. Robertson; 201 plants from the south-east of Madagascar, collected by Cloisel; 100 Scandinavian Hieracia, collected by Dahlstadt; 50 specimens of *Erythræa* from Wittrock; 90 species of Fungi from the Orinoco, collected by Roumeguère; 200 species of *Uredineæ*, and 400 species of other Fungi, from Sydow; 650 species of Fungi from Saxony, from Kruger; 300 British Fungi from Massee; 25 species of rare British Algæ from Holmes; 100 species of European Algæ from Hauck; 525 species of Canadian Mosses from Macoun; and 100 species of Mosses from Brazil, collected by Ule. 129 prepared slides of British Algæ exhibiting the organs of reproduction have been acquired from Mr. Buffham, and 150 similar slides of British Fungi from Mr. W. G. Smith.

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## *SHORT NOTES.*

Notes on Zoospores.—Last spring I received from America a specimen of *Pontederia crassipes*, which I placed in a shallow wooden tub in my conservatory. A few days ago I noticed several circular bright green patches, very thin and floating on the surface of the water. One of these I floated on to a slip for the microscope, and found portions of it could be drawn about with a needle without rupturing them, being held together by some gelatinous substance. On examination under the microscope, it proved to be a tangled mass of a very fine freshwater alga, so fine that the cell-walls could only be seen with a $\frac{1}{6}$ lens. In the water that surrounded it were swarms of zoospores, without any cilia that I could perceive, apparently moving by wriggling their bodies. They were snapping at their food right and left, and the head end had the power of protruding and retracting. I have only a superficial knowledge of the subject, but I do not find any figure in M. C. Cooke's *British Freshwater Algæ*.—B. Piffard.

Gloucestershire Rubi.—With regard to the records of Rubi in the *Fauna and Flora of Gloucestershire* by C. A. Witchell and W. B. Strugnell (see p. 248), to which the name of Prof. Babington is appended, the facts of the matter are these:—Prof. Babington examined some specimens which I had collected in the neighbourhood of Cheltenham in 1889–90, and named some, making notes on the rest. These notes I copied word for word, and sent to Mr.

Witchell, thinking he might put them to good use. Unfortunately for Prof. Babington's queries, when the *Flora* was published I discovered everything put down with that certainty which belongs to ignorance. Fortunately I have the plants and original notes, in the Professor's handwriting, in my possession.—J. Henry Burkill.

Potamogeton undulatus Wolfgang, in Cambridgeshire.—Mr. C. A. Billups found this species at Benwick, in a ditch by the side of Parsonware Drove, where it grew with its parent species, *P. crispus* and *P. perfoliatus*. Several rootstocks were found, but as they were all in a space of twenty yards along a shallow ditch, they probably all spread from one seedling plant. The Cambridgeshire form is nearer Wolfgang's type than any British specimens I have seen from other localities, differing only by its somewhat shorter internodes and leaves, just such differences as would occur between plants grown in shallow and deep water. Very few of the stems were in flower, and the foliage of them did not differ from that of the barren stems; in this respect agreeing with Wolfgang's plant, and differing from the var. *Cooperi*, which usually assumes more or less of a *nitens* look when in flower. All the spikes were barren; and although I have had forms of *undulatus* under cultivation for three years, I cannot succeed in getting any fruit, although artificial fertilization has been repeatedly tried. Mr. Billups tells me he has also found this species on the Flintshire coast of the Dee. I have now seen it from four English counties, and from Stirling; probably it will occur in many others. It should now be looked for, as it grows throughout the winter like *P. crispus*.—Alfred Fryer.

Chrysocoma Linosyris in Lancashire (p. 309). — This had been recorded on the authority of Anthony Mason, of Grange-over-Sands, in Aspland's *Guide* to Grange. These records until recently were regarded as untrustworthy, but one of them, *Orchis pyramidalis*, was confirmed last year (see *Naturalist* for March, 1892), and now Mr. Worsdell finds another plant which I for one have sought for in vain. Perhaps more confirmations may occur.—Lister Petty.

Lagurus ovatus in Jersey. — During my visit to Jersey in September, I found a few plants of *Lagurus ovatus* L. I found them growing in the sandy waste of the Quenvais, at the southern end of St. Ouen's Bay. I notice that in the last edition of Babington's *Manual* this grass is limited to Guernsey.—C. S. Nicholson.

Ranunculus petiolaris in Ireland?—Mr. Britten has called my attention to a buttercup in the British herbarium at S. Kensington, collected by Mr. Dyer on the shore of Loch Bofin, Drumod, Co. Leitrim, on May 30, 1871, and strangely labelled by him "?expanded *pseudo-reptans*." This is very near my plant, and should perhaps go to it; but there are three stems from one root (always solitary in the Scotch form, as far as my experience goes), the habit of growth is more compact, and the stem-leaves are more numerous and closer together. The facies approaches more nearly to that of *R. Flammula* than I have observed to be the case in *R. petiolaris*. It deserves further investigation.—Edward S. Marshall.

REDISCOVERY OF SAGINA ALPINA.— Mr. G. C. Druce announces in the *Ann. Scott. Nat. Hist.* for October his rediscovery of this plant on the Cairngorms, "on the steep cliffs of Corrie Sneachda, and also on a rock near the waterfall which enters Glen A'an from Ben Muich Dhu." Mr. Druce has compared his plant with Don's specimens, and considers them identical. It may be of interest to transcribe literally Don's note on his specimen in Herb. Mus. Brit. :—"*Sagina alpina*. This I believe to be a new species. I found it upon Ben Nives, in Lochaber. This answers to the following description—folior. radicalibus linearibus obtusus nitidus floro apetalo. This differs from the apetala in the radical leaves being broader and after and opening and it is a considerable larger plant. I have cultivated this and apetala for 2 years and the remain permanently different. Found in 1794. This is a cultivated speciment, but it is no way different from the wild spec. in appearance." The plant is the *Sagina maritima* δ. *alpina* of Syme (E. B. ed. 3, ii. 118).—JAMES BRITTEN.

## *NOTICES OF BOOKS.*

*An Introduction to the Study of Botany.* By ARTHUR DENDY and A. H. S. LUCAS. Melville, Mullen & Slade, Melbourne, 1892. pp. xv. 271, figs. 31. Price 6s.

ONE of the best things within the covers of this little book is the dedication, which shows the authors in the favourable light of respect and admiration for Baron von Mueller. It is divided into two parts. The first is intended to teach Elementary Botany at large, and the second to aid the student in a special study of Australian forms. The first part deals in the familiar manner with *Protococcus*, *Bacteria*, *Spirogyra*, *Mucor* and *Saccharomyces*, *Marchantia*, *Pteris*, *Pinus*, and *Vicia*, with a brief chapter on the principal divisions of the Vegetable Kingdom. It is, as indicated, the type system, not at its best, and illustrated by a series of ghastly diagrams. This sort of book will be very useful to the class taught by the writers, but outside it cannot compete with plenty of class-books known to us all. Part II. deals with the structure of Flowering Plants specially (this is better done), and contains a chapter with the characters of some Orders occurring in Australia, illustrative Australian genera being cited. One cannot help regretting that the authors did not confine their efforts to the production of a short introduction, from the structural and physiological point of view, to the *Key to the System of Victorian Plants* of Baron von Mueller. This admirable production of the great Australian naturalist, so useful to the fully fledged botanist, only needs such an introduction to bring it within reach of the classes taught in Australian colleges. Messrs. Lucas and Dendy are in no way lacking in the ability to take advantage of this suggestion and the unique opportunity of furthering the study of Botany instead of "botanical types."

G. M.

*Selections from the Correspondence of Dr. George Johnston.* Collected and arranged by his daughter, Mrs. Barwell-Carter. Edited by James Hardy, LL.D., Hon. Secretary to the Berwickshire Naturalists' Club. (Edinburgh: David Douglas, 1892). Demy 8vo, with portrait, pp. xxxv, 541.

Dr. George Johnston, of Berwick-upon-Tweed, belonged to that race of "all-round" naturalists which the progress of science has since rendered impossible, and to a race of letter-writers whose style had not been ruined by the penny post. It was said of him at the time of his death that "no department, either of zoology or botany, was neglected by him, and though chiefly conversant with those classes which observers generally neglect, he added something to the existing knowledge of nearly all." Having also a rich store of antiquarian information, and being gifted with a genial and kindly humour and a keen desire to foster in others a love of his favourite sciences, it might be anticipated that Johnston's correspondence would be well worth reading, and so indeed it proves.

It is, however, much to be regretted by botanists that his daughter, Mrs. Barwell-Carter, has only been able to include in this volume of *Selections* a very few letters prior in date to the publication of the *Flora of Berwick* in 1829–31. Though the publication in 1853 of the first and only volume of the *Natural History of the Eastern Borders*, which is exclusively botanical, shows that the author's interest in botany was by no means on the wane during the later part of his life, those of his letters which are preserved in his daughter's volume refer more particularly to his original researches in marine zoology, especially that of the Mollusca and Cœlenterata. The "happy thought" (which we owe presumably to the editor, Dr. James Hardy of the Berwickshire Naturalists' Club), of appending a classified 'Natural History Index' of all species referred to in the letters, shows, however, that they contain not a few references to plants, and, as might be expected from the author of the *Flora of Berwick*, those to Cryptogamia almost equal in number those relating to the Phanerogams. Though interested in roses, brambles and Hieracia, Johnston would hardly be ranked as a critical botanist now-a-days, at least so far as his knowledge of flowering plants is concerned.

Some botanists will, no doubt, be interested in this volume for its personal references to their fellow-workers of the past, and for the excellent summary biographies which are added in the notes, as in Dawson Turner's *Richardson Correspondence* and in other similarly well-edited volumes. Of these personal references there is also a complete index. Among Johnston's chief correspondents were P. J. Selby, Joshua Alder, Rev. David Landsborough, William Thompson of Belfast, Mrs. Alfred Gatty, and the editor of the volume now under notice. The work is illustrated by a very pleasing portrait; it seems singularly free from misprints or other mistakes, and its general "get-up" is excellent.

G. S. Boulger.

*The Carnation Manual.* Edited and issued by the National Carnation and Picotee Society (Southern Section). London: Cassell & Co. 8vo, pp. xix., 191. Price 3s. 6d.

One of the results looked for from the Carnation Conference at Chiswick, in July, 1890, was a consolidation of the practical methods of successful cultivation of carnations and pinks on the part of experienced growers. In furtherance of this idea, the National Carnation and Picotee Society have issued a *Carnation Manual*, consisting of a series of twenty-one short essays by various writers, with an introduction by the Rev. F. D. Horner. They are written in a light and easy manner, and are all thoroughly practical. It may, perhaps, seem invidious to select any for special mention; but that by Mr. F. W. Burbidge on "The Carnation in Ireland," and that on "Diseases" by Mr. Martin Rowan, are written in a scholarly style. The latter is illustrated by two excellent cuts. Mr. Dean's contribution on "Propagation of the Carnation" might with advantage have been a little longer. It is interesting to learn from Mr. Rowan that carnations, like human beings, are liable to gout from too much coddling and indulgence in high living. This tendency to over-culture was especially emphasized at the Conference, as also the fact that the pinks are hardy species, and in their natural condition occur in open situations on a sandy or chalky soil. Among obvious slips, the specific name of the botanist Dodoens was not Rembrandt, but Rembert; Gerard did not spell his name with three r's (p. 138); and "Flora's fair domain" is not synonymous with the front-garden. On p. 187, "a solution of soft-soapy water" is somewhat tautological, if not obscure. It is probably a *cacoëthes typographiendi* which requires that the name of the book should be printed at the head of every page: it would be more useful if the name of the particular essay were substituted. The inside of the cover is, moreover, disfigured by pictorial advertisements. But these are small matters. This handy volume has much to recommend it to all enthusiastic growers of carnations, whether amateurs or experienced horticulturists.

F. N. Williams.

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## *ARTICLES IN JOURNALS.*

*Annals of Botany* (dated Oct., issued Nov.). — E. Schunck, 'Chemistry of Chlorophyll.' — F. Darwin & D. F. M. Pertz, 'Artificial production of Rhythm in Plants.' — J. B. Farmer, 'Embryogeny of *Angiopteris evecta*' (1 plate). — M. F. Ewart, 'Staminal hairs of *Thesium*' (1 plate). — O. Stapf, 'Sonerileæ of Asia' (map). — R. A. Rolfe, '*Habenari-orchis viridi-maculata*, hyb. nat.' (1 plate).

*Annals of Scottish Nat. Hist.* (Oct.).—J. W. H. Trail, 'Pistillody of Stamens in "Champion" Potato.' — A. Bennett, 'Contributions towards a Flora of Caithness.' —G. C. Druce, 'Notes on "English Botany Supplement."' — F. B. White, 'List of Hieracia of Perthshire.'

*Bot. Centralblatt.* (Nos. 44–47). — W. Scharf, 'Beiträge zur Anatomie der Hypoxideen und einiger verwandter Pflanzen' (1 plate). — (No. 46). P. Knuth, 'Staubblattvorreife und Fruchtblattvorreife.'

*Botanical Magazine* (Tokio).—(Sept. 10). R. Yatabe, *Thalictrum Watanabei*, *Stylophorum lanceolata*, spp. nn.—(Oct. 10). R. Yatabe, *Cladrastis Tashiroi*, sp. n.

*Bot. Zeitung* (Oct. 14–28).—F. Krüger, 'Ueber die Wandverdickungen der Cambiumzellen.' — (Oct. 28–Nov. 18). P. Kossowitsch, 'Durch welche Organe nehmen die Leguminosen den freien Stickstoff auf?' (1 plate).

*Bull. Bot. Soc. France* (xxxix.: Comptes rendus, 4: Nov. 1).—T. Caruel, 'Sur le genre *Maillea*.'— —. Prillieux, 'Sur une maladie du Cognassier.'— F. Camus, '*Riccia nigrella*.' — G. Rouy, 'Plantes des Basses-Pyrénées' (*Conopodium Richteri*, sp. n.). — L. Guignard, 'L'appareil sécréteur des *Copaifera*.'—L. Mangin, 'Sur la présence de la callose chez les phanérogames.' — G. Rouy & A. Franchet, '*Maillea Urvillei*.' — A. Chatin, *Tirmania Cambonii*, sp. n. — A. Franchet, 'Les genres *Ligularia*, *Senecillis*, *Cremanthodium* et leurs espèces dans l'Asie centrale et orientale.'

*Gardeners' Chronicle* (Oct. 29). — S. P. Oliver, 'Robert Lyall.' (Nov. 12). *Lycopodium Mooreanum* (Herb. Sander) Baker, *Oncidium Saintlagerianum* Rolfe, spp. nn. — R. A. Rolfe, 'Garden Orchids' (*Eulophia: E. latifolia*, *E. Mackenii*, spp. nn.).

*Journal de Botanique* (Nov. 1, 16). — H. Hua, '*Polygonatum* et *Aulisconema*, gen. nov., de la Chine.'—E. G. Camus, 'Monographie des Orchidées de France.' — (Nov. 1). J. Vesque, 'La tribu des Clusiées.' — P. Hariot, 'Un nouveau Champignon lumineux de Tahiti' (*Pleurotis Lux*).

*Oesterr. Bot. Zeitschrift.* (Nov.). — A. v. Degen, 'Bemerkungen über einige orientalische Pflanzenarten.' — A. Hansgirg, '*Chætosphæridium Pringsheimii* Klebahn ist mit *Aphanochæte globosa* (Nordst.) Wolle identisch.'—E. v. Halácsy, 'Zur Flora des Balkanhalbinsel' (*Verbascum macrantherum*, *V. Halacsynanum* Sint. & Bornm., spp. nn.). — J. Freyn, 'Plantæ novæ Orientales' (*Marrubium Bornmulleri*, *Allium Sintenisii*, *A. lacerum*, *A. Kharputense*, spp. nn.).

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## *BOOK-NOTES, NEWS, &c.*

LEJEUNEÆ MADAGASCARIENSIS, by Mr. W. H. Pearson, is a separate reprint of 10 pp. and 2 tabb. from the Christiania *Videnskabs-Selskabs Forhandlinger*, 1892, No. 8. It is a list of all the species (33 in number) that are known to occur in Madagascar, and is based on the scheme of subgenera established by Dr. Spruce in *Hepaticæ Amazonicæ et Andinæ*. One new species, *Lopholejeunea lepidoscypha* Kiær et Pearson, is described and figured, and is

remarkable for the scales on the perianth. The dimensions and a figure of *Acrolejeunea Borgeni* Steph. are given, and some notes on other species add to the value of the paper. As to *Lejeunea cornuta* Lindenb., which is not included in the list, but is mentioned in the preface as being the only species recorded from Madagascar in the *Synopsis Hepaticarum*, Stephani examined a sterile specimen from Isle de France (Mougeot), preserved in Herb. Lindenberg at Vienna, and says in *Hedwigia*, 1890, p. 94, that it is conspicuously different from the West Indian type of the species. In Herb. Hampe in the British Museum is a specimen from Mauritius, upon the ticket of which Gottsche has written that it consists of two species belonging to the Ceratanthaceæ, one approaching *L. cornuta*, the other with dentate leaves approaching *L. spinosa;* and Lindenberg has added that he takes it all for *one* species, and indeed for *L. cornuta* or an intermediate form of *cornuta* and *brasiliensis*. One is led to speculate whether it can be identical with Stephani's new species, *Ceratolejeunea mauritiana*, mentioned but not described in *Revue Bryologique*, 1891, p. 57.—A. G.

The S.P.C.K. has lately issued a popular history of entomogenous fungi in a 5s. volume by Dr. M. C. Cooke, entitled *Vegetable Wasps and Plant Worms*. As a popular account of the subject it is useful. It is largely based on Mr. G. R. Gray's memoir, of which a new edition in MS. exists in the Botanical Department of the British Museum; this should have been consulted by Dr. Cooke. It would not be difficult to take exception on the ground of accuracy to certain details. For example, "*Isaria Saussurei*, pro tem." is a way of publishing a new species that has its drawbacks. Who is "Colonel Sheering," after whom Mr. Massee published *Cordyceps Sherringii*—here called *C. Sheeringii?* On turning to the *Annals of Botany*, vol. v. p. 510, where the species was first published, we find "Coll. R. V. Sherring, F.L.S." Mr. Sherring thus finds himself suddenly promoted. There is another Colonel on the preceding page of the *Annals*, who may have been in Mr. Cooke's mind, or mayhap he was thinking of *Cordyceps militaris*.

Mr. J. P. Thomson's handsome and interesting volume on *British New Guinea* (George Philip & Son) is perhaps a little disappointing to botanists, inasmuch as the space devoted to plants is very limited. It could not, however, be in better hands than those of Baron von Mueller, to whom it has been entrusted, whose "Succinct general notes on the Flora of British New Guinea," although occupying only four pages, give an admirable summary of the botany of the region.

The first volume of Mr. Massee's *British Fungus-flora* has been issued, but no copy for review has reached us, so that we are unable to give any account of its contents.

Mr. R. A. Rolfe figures and describes in the *Annals of Botany*, under the somewhat alarming name *Habenari-orchis viridi-maculata*, an interesting natural hybrid from Longwitton, Northumberland. We do not learn from his note whether the specimen was the only

example observed. Mr. Rolfe says that the hybrid has not been previously recorded from the Continent.

A NEW botanical journal, the *Bulletin de l'Herbier Boissier*, will shortly appear, under the editorship of M. Eugène Autran, Keeper of the Herbarium.

Mr. F. V. COVILLE sends us a reprint of his paper "On the Panamint Indians of California," reprinted from the *American Anthropologist* of October last. The Panamint tribe, existing only in Inyo county, California, is now nearly exterminated, and Mr. Coville thinks it well to put on record the observations made while he was acting as botanist to the Death Valley Expedition in 1891. They are mainly connected with the uses made of the scanty flora of the district, and the following notes on the employment of our common reed may interest some at home. "*Phragmites communis* furnishes what is known as 'sugar.' In early summer, commonly in June, when the plants have attained nearly their full size, they are cut and dried in the sun. When perfectly brittle the whole plant is ground and the finer portion separated by sifting. This moist sticky flour is moulded by the hands into a thick gum-like mass. It is then set near a fire and roasted until it swells and browns slightly, and in this taffy-like state it is eaten." . . . Arrows are made from the stems of the reed. The shaft is about $3\frac{1}{2}$ ft. long. Nearly mature but still green reeds are cut, their leaves removed, and the stems dried and strightened in the hands before a fire. In the straightening process use is often made of a small stone, upon the face of which have been cut two grooves, large enough to admit an arrow-shaft. The stone is heated, and a portion of the crude arrow is laid in one of the grooves until it is hot. The cane is then straightened by holding it crosswise in the teeth and drawing the ends downwards. By repeating this process throughout the whole length of the shaft a marvellously straight arrow is produced."

IN a recent communication to the Smithsonian Institute, Mr. Theodore Holm discusses the morphology of the spikelet of *Anthoxanthum odoratum*. He maintains that it is comparable with *Hierochloë* in that the two awned glumes, numbers 3 and 4, represent sterile flowers, and also that the fertile flower is axillary, not terminal, as Döll and subsequently Eichler asserted. He adduces as evidence an abnormal specimen found growing in a recently flooded spot in the Smithsonian Park. In some of the numerous spikelets the true flowering glume, number 5, was awned like the third and fourth, and the three were otherwise similar; moreover, the fourth sometimes enveloped a pale, though such was never found associated with the third. As regards the lateral portion of the true flower, the rachis was frequently continued beyond it, which settles the point at any rate as regards Mr. Holm's specimens.

## *OBITUARY.*

The death is announced of Dr. C. M. Gottsche, of Altona, on Sept. 28th last, at a ripe old age. Born July 3rd, 1808, at Altona, where he practised as a Doctor of Medicine, he early had his attention directed to the study of the Hepaticæ, which in his leisure time he pursued with an enthusiasm and careful diligence which won for him the admiration of all students. In 1842 appeared his first important work, *Untersuchungen über Haplomitrium Hookeri*, &c., illustrated by eight beautifully coloured plates. In 1844, conjointly with Nees and Lindenberg, he published the *Synopsis Hepaticarum*, which for nearly half a century has been the student's handbook. In 1855 Rabenhorst issued the first part of his *Hepaticæ europææ exsiccatæ*. After the appearance of a few parts, Gottsche joined him in the editorship, and soon after took the sole responsibility. Parts continued to be issued up to 1879, when the last decades, 65 and 66, were published. With each part interesting notes were given, often illustrated by beautiful drawings. I believe he learnt the art of engraving for the sole purpose of reproducing his accurate drawings. In 1863 appeared, what Prof. Underwood has lately described as his matchless *Mexikanske Levermosser*, being a description of the Hepaticæ collected in Mexico by Liebmann; it is a very fine work, beautifully illustrated, the drawings being the very ideal of perfection. In 1864 he published in the *Ann. Sc. Nat.* his *Hepaticæ Novo-Granatensis*, and about the same time and in the same *Annales* his *Pugillus Nov. Hep.*, both papers exquisitely illustrated. In 1880 his *Neuere Untersuchungen über die Jungermanniæ Geocalyceæ* appeared, and although in his seventy-second year the same thoroughness distinguished his work, and the drawings of the minute organs, dissected under the microscope, showed that his pencil had lost none of its skill. In 1882 he contributed a paper to the *Abhandl. nat. ver. Bremen*, on the Hepaticæ of Madagascar; and during the last few years, along with Dr. V. Schiffner, described the Hepaticæ collected on the Expedition of S.M.S. 'Gazelle.' He enumerated the Australian Hepaticæ for Baron Mueller, contributed descriptions of Hepaticæ to *Flora Danica*, and numerous short papers to *Hedwigia* and other botanical journals. The Hepaticæ collected by Wright in Cuba, and distributed as Wright's *Hepaticæ Cubenses*, were named by him; as also were the Hepaticæ collected by Husnot in the Antilles, specimens from almost every part of the world being sent to him for determination. As a correspondent he was unique; his letters appeared to be the work of weeks, like treatises, long and full of information, usually accompanied with drawings and dissections, and will be treasured by all his friends. We have in Britain three species founded by him, all good ones:—*Cesia crenulata*, *Marsupella alpina*, and *Radula Lindbergii*.

W. H. Pearson.

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## ERRATA.

Page 132, line 11 from top, *for* "F. W.," *read* "C. H."
" 14 " *for* "Kew," *read* "Richmond."
239, 25 " *dele* "*S. orientalis* Cav."
248, 28 " *for* "1891," *read* "1890."
297, 6 from bottom, *for* "about forty years ago," *read* "in 1868—70."
" 9 " *for* "A. L. W.," *read* "W. L. W."
320, 7 " *for* "*Hileiocus*," *read* "*Hibiscus*."

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EDITED BY

JAMES BRITTEN, F.L.S.,

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